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=> fil reg
FILE 'REGISTRY' ENTERED AT 12:27:52 ON 01 JUN 2011
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STRUCTURE FILE UPDATES:   31 MAY 2011  HIGHEST RN 1303643-78-8
DICTIONARY FILE UPDATES:  31 MAY 2011  HIGHEST RN 1303643-78-8

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http://www.cas.org/support/stngen/stndoc/properties.html

=> d que
L2            29 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (10025-73-7/BI
                 OR 10241-05-1/BI OR 22519-64-8/BI OR 7447-39-4/BI OR
                 7550-45-0/BI OR 7646-78-8/BI OR 7646-85-7/BI OR 7718-98-1/B
                 I OR 7772-99-8/BI OR 851190-38-0/BI OR 851190-39-1/BI OR
                 851190-40-4/BI OR 851190-41-5/BI OR 851190-42-6/BI OR
                 851190-43-7/BI OR 851190-44-8/BI OR 851190-45-9/BI OR
                 851190-46-0/BI OR 851190-47-1/BI OR 851190-48-2/BI OR
                 851190-49-3/BI OR 851190-50-6/BI OR 851190-51-7/BI OR
                 851190-53-9/BI OR 851190-54-0/BI OR 851190-55-1/BI OR
                 851190-56-2/BI OR 851190-57-3/BI OR 851190-58-4/BI)
L6          1828 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (LI(L)FE(L)P(L)O)
                 /ELS
L7          1338 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L6 AND O4P
L8           121 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L7 AND 4/ELC.SUB

L10          330 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L7 AND (V OR CR
                 OR CU OR ZN OR IN OR SN OR MO OR TI)/ELS
L11           20 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L10 AND L2
L12            9 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L2 NOT L11
L13          189 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L10
L14        99730 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L12
L15            8 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L13 AND L14
L16          761 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L7
L17           12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L14 AND L16
L18           12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L15 OR L17
L20          595 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L16 AND ELECTROCHE
                 M?/SC,SX
L21          149 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L20 AND (HALIDE?
                 OR CHLORIDE? OR FLUORIDE? OR BROMIDE? OR IODIDE?)
L22        95725 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  "SECONDARY
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                BATTERIES"+PFT/CT
L23          121 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L21 AND L22
L24           49 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L23 AND PROC/RL
L25           15 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L13 AND L24
L27              QUE  SPE=ON  ABB=ON  PLU=ON  CATHODE# OR POSITIVE ELECTRO
                 DE#
L28           42 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L24 AND L27
L29           33 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L28 AND PREP/RL
L30           39 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L25 OR L29
L31           34 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L30 NOT L18
L37            1 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  "IRON LITHIUM
                 PHOSPHATE"/CN
L38          497 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L37
L39          368 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L38 AND L27
L40          297 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L39 AND L22
L41          100 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L40 AND PROC/RL
L42            3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L41 AND L13
L43           12 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L38 AND L13
L44           38 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L38 AND L16
L45           38 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L43 OR L42 OR L44

L46           34 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L45 AND ELECTROCHE
                 M?/SC,SX
L52          125 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L8
L53          111 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L52 AND ELECTROCHE
                 M?/SC,SX
L54           80 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L53 AND L22
L55           65 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L54 AND L27
L57           37 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L55 AND (1840-2006
                 )/PRY,AY,PY
L58            3 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L18 AND (1840-2006
                 )/PRY,AY,PY
L59           13 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L46 AND (1840-2006
                 )/PRY,AY,PY
L60           16 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L31 AND (1840-2006
                 )/PRY,AY,PY
L61           29 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L59 OR L60
L62           29 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L61 NOT L58
L63           37 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L57 NOT L58
L64           57 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L62 OR L63
L65           60 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L58 OR L64
L66           32 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L65 AND PROC/RL
L67           44 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L65 AND PREP/RL
L68           49 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L66 OR L67
L69           26 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L68 AND DEV/RL
L71           11 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L68 AND  CATHODE
                 MATERIAL?
L72        31511 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  "BATTERY CATHODES"
                 +PFT/CT
L73           37 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L68 AND L72
L74           41 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L69 OR L71 OR L73

L75           20 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L74 AND  (HALIDE?
                 OR CHLORIDE? OR FLUORIDE? OR BROMIDE? OR IODIDE?)
L76           41 SEA FILE=HCAPLUS SPE=ON  ABB=ON  PLU=ON  L74 OR L75


=> fil hcap
FILE 'HCAPLUS' ENTERED AT 12:27:58 ON 01 JUN 2011
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FILE COVERS 1907 - 1 Jun 2011 VOL 154 ISS 23
FILE LAST UPDATED: 30 May 2011 (20110530/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Apr 2011
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Apr 2011

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the fourth quarter of 2010.

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l76 1-41 ibib ed abs hitstr hitind

L76 ANSWER 1 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2009:1526409 HCAPLUS Full-text
DOCUMENT NUMBER: 152:41294
TITLE: Electrode materials for electrochemical cells
INVENTOR(S): Allen, Jan L.; Jow, T. Richard
PATENT ASSIGNEE(S): United States Dept. of the Army, USA
SOURCE: U.S., 10pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 7629080	B1	20091208	US 2005-185845 <--		20050721
PRIORITY APPLN. INFO.:			US 2004-591965P <--	P	20040723

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 09 Dec 2009
AB A lithiated metal phosphate material is doped by a portion of the lithium atoms which are present at the M2 sites of the material. The doped material has the general formula: Li1+xM1-x-dDdPO4. In the formula, M is a divalent ion of one or more of Fe, Mn, Co and Ni. D is a divalent metal ion which is one or more of Mg, Ca, Zn, and Ti. It is present in an amount represented by the subscript d which has a value ranging from 0 to 0.1. The portion of the lithium which is present at the M2 octahedral sites of the material is represented by the subscript x and is greater than 0 and no more than 0.07.

Also disclosed are electrodes which incorporate the material as well as batteries, including lithium ion batteries, which include cathodes fabricated from the doped, lithiated metal phosphate materials.

IT 1020400-44-5P, Iron lithium phosphate (Fe0.98Li1.02(PO4))
(electrode material; electrode materials for electrochem. cells)
RN 1020400-44-5 HCAPLUS
CN Iron lithium phosphate (Fe0.98Li1.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1.02	7439-93-2
Fe	0.98	7439-89-6

IT 1020400-45-6, Iron lithium phosphate (Fe0.96Li1.04(PO4))
1020400-46-7, Iron lithium phosphate (Fe0.95Li1.05(PO4))
(electrode material; electrode materials for electrochem. cells)
RN 1020400-45-6 HCAPLUS
CN Iron lithium phosphate (Fe0.96Li1.04(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1.04	7439-93-2
Fe	0.96	7439-89-6

RN 1020400-46-7 HCAPLUS
CN Iron lithium phosphate (Fe0.95Li1.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1.05	7439-93-2
Fe	0.95	7439-89-6

INCL 429221000; 429223000; 429224000; 429231600; 429229000; 429231950; 429231100; 252182100
IPCI H01M0004-36 [I,A]
IPCR H01M0004-36 [I,A]
NCL 429/221.000; 252/182.100; 429/223.000; 429/224.000; 429/229.000; 429/231.100; 429/231.600; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery cathodes
Electrically conductive pastes
Electrochemical cells
(electrode materials for electrochem. cells)
IT Secondary batteries
(lithium; electrode materials for electrochem. cells)
IT 1020400-44-5P, Iron lithium phosphate (Fe0.98Li1.02(PO4))
(electrode material; electrode materials for electrochem. cells)
IT 1020400-45-6, Iron lithium phosphate (Fe0.96Li1.04(PO4))
1020400-46-7, Iron lithium phosphate (Fe0.95Li1.05(PO4))
1198601-70-5, Iron lithium magnesium phosphate (Fe0.9Li1.05Mg0.05(PO4)) 1198601-72-7, Iron lithium titanium phosphate (Fe0.92Li1.02Ti0.06(PO4)) 1198601-73-8, Iron lithium zinc phosphate (Fe0.95Li1.03Zn0.02(PO4))

(electrode material; electrode materials for electrochem. cells)
REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 2 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:1102148 HCAPLUS Full-text
DOCUMENT NUMBER: 149:359432
TITLE: Nanoscale ion-storage materials
INVENTOR(S): Chiang, Yet-Ming; Gozdz, Antoni S.; Payne, Martin W.
PATENT ASSIGNEE(S): A123 Systems, Inc., USA
SOURCE: PCT Int. Appl., 77pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2008109209	A2	20080912	WO 2008-US52584	20080131
WO 2008109209	A3	20081204		
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
US 20070190418	A1	20070816	US 2007-672931	20070208
			<--	
KR 2009109124	A	20091019	KR 2009-7018664	20080131
EP 2118949	A2	20091118	EP 2008-782740	20080131
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR				
JP 2010517917	T	20100527	JP 2009-549177	20080131
CN 101669234	A	20100310	CN 2008-80009462	20090923

PRIORITY APPLN. INFO.:		
US 2007-672931	A	20070208
US 2007-888929P	P	20070208
US 2005-706273P	P	20050808
<--		
US 2005-741606P	P	20051202
<--		
US 2006-396515	A2	20060403
<--		
WO 2008-US52584	W	20080131

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 12 Sep 2008

AB Nanoscale ion storage materials are provided that exhibit unique properties measurably distinct from their larger scale counterparts. For example, the nanoscale materials can exhibit increased electronic conductivity, improved electromech. stability, increased rate of intercalation, and/or an extended range of solid solution Useful nanoscale materials include alkaline transition metal phosphates, such as LiMPO4, where M is one or more transition metals. The nanoscale ion storage materials are useful for producing devices such as high energy and high power storage batteries, battery-capacitor hybrid devices, and high rate electrochromic devices. Nanoscale ion storage materials are provided that exhibit unique properties measurably distinct from their larger scale counterparts. For example, the nanoscale materials can exhibit increased electronic conductivity, improved electromech. stability, increased rate of intercalation, and/or an extended range of solid solution Useful nanoscale materials include alkaline transition metal phosphates, such as LiMPO4, where M is one or more transition metals. The nanoscale ion storage materials are useful for producing devices such as high energy and high power storage batteries, battery-capacitor hybrid devices, and high rate electrochromic devices.

IT 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
(nanoscale ion storage materials)

RN 714249-20-4 HCAPLUS
CN Iron lithium phosphate (FeLi0.99(PO4)) (CA INDEX NAME)

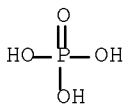
Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.99	7439-93-2
Fe	1	7439-89-6

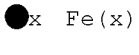
RN 876064-87-8 HCAPLUS
CN Iron lithium phosphate (FeLi0.95(PO4)) (CA INDEX NAME)

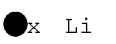
Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.95	7439-93-2
Fe	1	7439-89-6

IT 411234-54-3, Iron lithium phosphate
(nanoscale ion storage materials)

RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)







IPCI H01M0004-58 [I,A]; H01M0010-44 [I,A]; C01B0025-45 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]; C01B0025-00 [I,C]; C01B0025-45 [I,A]
IPCR C01B0025-45 [I,A]; H01M0004-02 [N,A]; H01M0004-58 [I,A]; H01M0010-052 [I,A]; H01M0010-36 [I,A]; H01M0010-44 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76
IT Secondary batteries
(lithium; nanoscale ion storage materials)
IT Battery cathodes
Electrochromic devices
Nanostructured materials
Open circuit potential
Surface area
(nanoscale ion storage materials)
IT 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
(nanoscale ion storage materials)
IT 7664-38-2D, Phosphoric acid, lithium transition metal compound
15365-14-7D, Iron lithium phosphate felipo4, lithium-deficient
411234-54-3, Iron lithium phosphate
(nanoscale ion storage materials)

L76 ANSWER 3 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:816094 HCAPLUS Full-text
DOCUMENT NUMBER: 149:204396
TITLE: Preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped lithium iron(II) phosphate for use in lithium ion batteries
INVENTOR(S): Cao, Wenyu; Zhang, Shuiyuan; Xiao, Feng
PATENT ASSIGNEE(S): BYD Company Limited, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 26pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101209820	A	20080702	CN 2006-10167328 <--	20061227
CN 101209820	B	20100519		
PRIORITY APPLN. INFO.:			CN 2006-10167328 <--	20061227

ED Entered STN: 08 Jul 2008
AB Metal-doped ferrous oxalate dihydrate is prepared by contacting a ferrous salt (ferrous sulfate, ferrous chloride and/or ferrous acetate) and a soluble nonferrous metal salt with an oxalate salt till the pH of the mixed solution is 3-6. The nonferrous metal salt can be a sulfate, nitrate and/or chloride of a IIA metal, IIIA metal, IVA metal, such as magnesium sulfate, aluminum sulfate, or zirconium sulfate. The oxalate can be sodium oxalate, potassium oxalate, ammonium oxalate, and/or lithium oxalate. The lithium iron phosphate is prepared by sintering a mixture of a lithium source, phosphorus source and the iron source material at 650-850° for 8-40 h in an inert gas or reducing gas atm; followed by cooling. The lithium source can be lithium hydroxide, lithium carbonate, or lithium acetate. The phosphorus source can be ammonium

phosphate, ammonium hydrogen phosphate, or lithium phosphate. The mol. ratio of lithium to iron to phosphorus is (1-1.07):1:1. The obtained lithium iron(II) phosphate has a small particle size, uniform particles, good conductivity and electrochem. properties.

IT 912841-83-9P, Cobalt iron lithium phosphate
912841-84-0P, Iron lithium nickel phosphate
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

RN 912841-83-9 HCAPLUS
CN Cobalt iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Co	x	7440-48-4
Li	x	7439-93-2
Fe	x	7439-89-6

RN 912841-84-0 HCAPLUS
CN Iron lithium nickel phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

IT 7772-99-8, Stannous chloride, reactions
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

RN 7772-99-8 HCAPLUS
CN Tin chloride (SnCl2) (CA INDEX NAME)

IPCI C01B0025-45 [I,A]; H01M0004-58 [N,A]; H01M0004-58 [I,A]
IPCR C01B0025-00 [I,C]; C01B0025-45 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT Battery cathodes
Electric capacitance
Electric conductivity
Particle size
Particle size distribution
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)
IT 554453-36-0P, Aluminum iron lithium phosphate 554453-37-1P, Iron lithium zirconium phosphate 554453-38-2P, Iron lithium manganese phosphate 554453-42-8P, Iron lithium magnesium phosphate

912841-83-9P, Cobalt iron lithium phosphate
912841-84-0P, Iron lithium nickel phosphate
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

IT 7782-42-5, Graphite, uses 24937-79-9, Polyvinylidene fluoride
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

IT 62-76-0, Sodium oxalate 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 583-52-8, Potassium oxalate 1113-38-8, Ammonium oxalate 1310-65-2, Lithium hydroxide 3094-87-9, Ferrous acetate 7446-70-0, Aluminum chloride, reactions 7646-79-9, Cobaltous chloride, reactions 7718-54-9, Nickelous chloride, reactions 7720-78-7, Ferrous sulfate 7722-76-1, Ammonium dihydrogen phosphate 7733-02-0, Zinc sulfate 7758-94-3, Ferrous chloride 7772-99-8, Stannous chloride, reactions 7773-01-5, Manganous chloride 7782-63-0, Ferrous sulfate heptahydrate 7783-28-0, Ammonium hydrogen phosphate 7784-31-8, Aluminum sulfate octadecahydrate 7785-87-7, Manganous sulfate 7786-30-3, Magnesium chloride, reactions 7790-69-4, Lithium nitrate 10034-99-8, Magnesium sulfate heptahydrate 10043-52-4, Calcium chloride, reactions 10099-59-9, Lanthanum nitrate 10101-97-0, Nickel sulfate hexahydrate 10124-43-3, Cobaltous sulfate 10361-37-2, Barium chloride, reactions 10361-65-6, TriAmmonium phosphate 10377-52-3, Lithium phosphate 10377-60-3, Magnesium nitrate 10476-85-4, Strontium chloride 13453-80-0, Lithium dihydrogen phosphate 13473-90-0, Aluminum nitrate 13746-89-9, Zirconium nitrate 33943-39-4, DiLithium hydrogen phosphate
(preparation of metal-doped ferrous oxalate dihydrate as iron source material for preparing metal-doped FeLiPO4 for use in lithium ion batteries)

L76 ANSWER 4 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:778038 HCAPLUS Full-text
DOCUMENT NUMBER: 149:108256
TITLE: Mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries
INVENTOR(S): Nazar, Linda Faye; Makahnouk, Michael; Ellis, Brian; Toghill, Kathryn; Makimura, Yoshinari
PATENT ASSIGNEE(S): Can.
SOURCE: U.S. Pat. Appl. Publ., 31pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20080153002	A1	20080626	US 2007-946038 <--	20071127
PRIORITY APPLN. INFO.:			US 2006-861058P <--	P 20061127

ED Entered STN: 27 Jun 2008

AB LixNa2-xFePO4F with 0<x≤2 was prepared by exchanging Li ions for Na ions in Na2FePO4F. The compound may be used as a cathode material for a Li ion battery. The battery may be comprised of an electrode active material Li2FePO4F, an anode and an electrolyte. Na2FePO4F may be synthesized by a flux reaction. Microcryst. Na2FePO4F may be synthesized by a solution method. Na2FePO4F may be used as a cathode material for a Li ion battery and may be C composite coated.

IT 1034495-99-2P, Iron lithium sodium fluoride phosphate (Fe(Li,Na)2F(PO4))
(mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)

RN 1034495-99-2 HCAPLUS

CN Iron lithium sodium fluoride phosphate (Fe(Li,Na)2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	0 - 2	7440-23-5
Li	0 - 2	7439-93-2
Fe	1	7439-89-6

INCL 429221000; 423301000; 252182100

IPCI H01M0004-52 [I,A]; C01B0025-10 [I,A]

IPCR C01B0025-10 [I,A]; H01M0004-02 [N,A]; H01M0004-58 [I,A]; H01M0010-0525 [I,A]; H01M0010-36 [I,A]

NCL 429/221.000; 252/182.100; 423/301.000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 78

ST lithium sodium iron fluorophosphate cathode lithium battery

IT Secondary batteries
(lithium; mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)

IT Battery cathodes
(mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)

IT Crystal structure
(of sodium iron fluorophosphate cathode materials for lithium-ion batteries)

IT 7440-44-0, Carbon, uses
(carbon-coated lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)

IT 7550-35-8, Lithium bromide (LiBr) 10377-51-2, Lithium iodide (LiI)
(in preparation of mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)

IT 107-21-1, Ethylene glycol, uses 110-71-4, DME 554-95-0, 1,3,5-Benzenetricarboxylic acid
(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)

IT 7727-21-1 13826-86-3 14635-75-7
(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)

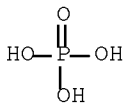
IT 127-09-3, Sodium acetate 144-55-8, Sodium carbonate (NaHCO3), reactions 497-19-8, Sodium carbonate (Na2CO3), reactions 1345-25-1, Ferrous oxide, reactions 3094-87-9, Iron(II) acetate 6047-25-2, Iron oxalate (FeC2O4) dihydrate 7664-38-2, Phosphoric

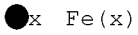
acid, reactions 7681-49-4, Sodium fluoride (NaF), reactions 7722-76-1, Ammonium phosphate (NH4H2PO4) 10045-89-3 10049-21-5 12191-70-7, Sodium fluoride metaphosphate (Na2F(PO3)) 13011-54-6, Ammonium sodium phosphate ((NH4)NaHPO4)
(in preparation of sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 1034495-99-2P, Iron lithium sodium fluoride phosphate (Fe(Li,Na)2F(PO4))
(mixed lithium/sodium iron fluorophosphate cathode materials for lithium-ion batteries)
IT 418771-26-3P, Iron sodium fluoride phosphate (FeNaF(PO4))
477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
958636-40-3P, Iron sodium fluoride phosphate (FeNa1.5F(PO4))
1034496-00-8P, Iron sodium fluoride phosphate
1034496-02-0P, Iron sodium fluoride phosphate (FeNa1.25F(PO4)) 1034496-03-1P, Iron sodium fluoride phosphate (FeNa1.75F(PO4))
(sodium iron fluorophosphate cathode materials for lithium-ion batteries)

L76 ANSWER 5 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:649750 HCAPLUS Full-text
DOCUMENT NUMBER: 149:82606
TITLE: Process for producing lithium iron phosphate cathode material in continuous vacuum rotary kiln
INVENTOR(S): Yu, Weijie
PATENT ASSIGNEE(S): Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 8pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 101186289	A	20080528	CN 2006-10149109 <--	20061117
PRIORITY APPLN. INFO.:			CN 2006-10149109 <--	20061117

ED Entered STN: 02 Jun 2008
AB The invention is characterized in that: (1) a kind of continuous vacuum rotary kiln is used with continuous feeding and continuous discharging, (2) material is rotating and moving forward with rotating barrel of rotary kiln for uniform heating during calcination, and (3) completely dynamic high efficiency calcination is realized. The rotary kiln consists of a spiral feeder, a receiving hopper, a receiving bin, a feeding bin, a reception bin, a furnace body, a gas inlet, a gas outlet, etc. The title process comprises weighing, proportioning, pulverizing mech., ball milling, pressing into pills, calcining, pulverizing mech., ball-milling to coat conductive carbon, detecting and packing. The invention has the advantages such as low energy consumption, high efficiency, good quality of product, etc.
IT 411234-54-3P, Iron lithium phosphate 1033326-43-0P
(process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)





RN 1033326-43-0 HCAPLUS
CN Iron lithium magnesium titanium phosphate (Fe0.98LiMg0.01Ti0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.01	7440-32-6
Mg	0.01	7439-95-4
Li	1	7439-93-2
Fe	0.98	7439-89-6

IPCI C01B0025-45 [I,A]
IPCR C01B0025-45 [I,A]
CC 49-5 (Industrial Inorganic Chemicals)
Section cross-reference(s): 52
IT Size reduction
(crushing; process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
IT Secondary batteries
(lithium; process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
IT Ball milling
Cathodes
Coating process
Sintering
(process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
IT Kilns
(rotary; process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
IT 411234-54-3P, Iron lithium phosphate 1033326-43-0P
(process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
IT 516-03-0, Ferrous oxalate 554-13-2, Lithium carbonate 1309-42-8, Magnesium hydroxide 7722-76-1, Ammonium dihydrogen phosphate 12026-28-7, Titanic acid 13453-80-0, Lithium dihydrogen phosphate 13463-67-7, Titanium dioxide, reactions
(process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)
IT 7440-44-0, Carbon, uses

(process for production of lithium iron phosphate cathode material in continuous vacuum rotary kiln)

L76 ANSWER 6 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2008:508653 HCAPLUS Full-text
DOCUMENT NUMBER: 148:499757
TITLE: Nonaqueous electrolyte secondary battery
INVENTOR(S): Shirakata, Hironori; Hasumi, Koji; Akita, Hiroyuki; Donoue, Kazunori; Kida, Yoshinori
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 17 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20080096098	A1	20080424	US 2007-976088 <--	20071019
JP 2008181850	A	20080807	JP 2007-136101 <--	20070523
KR 2008035466	A	20080423	KR 2007-104044 <--	20071016
CN 101165946	A	20080423	CN 2007-10163274 <--	20071019
PRIORITY APPLN. INFO.:			JP 2006-285283 A <--	20061019
			JP 2006-350735 A <--	20061227
			JP 2007-136101 T0	20070523

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 25 Apr 2008
AB A non-aqueous electrolyte secondary battery has a pos. electrode, a neg. electrode, and a non-aqueous electrolyte. The pos. electrode has a pos. electrode mixture layer containing a pos. electrode active material, a binder agent, and a conductive agent. The pos. electrode active material in the pos. electrode mixture layer contains an olivine-type lithium-containing metal phosphate represented by the general formula LixMPO4, where M is at least one element selected from the group consisting of Co, Ni, Mn, and Fe, and x is 0<x<1.3. The conductive agent in the pos. electrode mixture layer is composed of a mixture of carbon particles and carbon fiber.
IT 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4))
1019336-27-6, Iron lithium phosphate (FeLi0-1.3(PO4))
(nonaq. electrolyte secondary battery)
RN 198782-39-7 HCAPLUS
CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

RN 1019336-27-6 HCAPLUS
CN Iron lithium phosphate (FeLi0-1.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1.3	7439-93-2
Fe	1	7439-89-6

INCL 429094000; 429211000; 429221000; 429223000; 429224000; 429231800
IPCI H01M0004-58 [I,A]; H01M0002-26 [I,A]
IPCR H01M0004-58 [I,A]; H01M0002-26 [I,A]
NCL 429/094.000; 429/211.000; 429/221.000; 429/223.000; 429/224.000; 429/231.800; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Secondary batteries
(lithium; nonaq. electrolyte secondary battery)
IT Battery cathodes
(nonaq. electrolyte secondary battery)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4)) 1019336-27-6, Iron lithium phosphate (FeLi0-1.3(PO4)) 1021177-20-7, Cobalt lithium phosphate (CoLi0-1.3(PO4)) 1021177-21-8, Lithium nickel phosphate (Li0-1.3Ni(PO4)) 1021177-22-9, Lithium manganese phosphate (Li0-1.3Mn(PO4))
(nonaq. electrolyte secondary battery)

L76 ANSWER 7 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:1449084 HCAPLUS Full-text
DOCUMENT NUMBER: 148:82133
TITLE: Amorphous and partially amorphous nanoscale ion storage materials for batteries
INVENTOR(S): Chiang, Yet-Ming; Pullen, Anthony E.; Meethong, Nonglak
PATENT ASSIGNEE(S): A123Systems, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 37 pp., Cont.-in-part of U.S. Ser. No. 396,515.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
US 20070292747	A1	20071220	US 2006-607525 <--		20061201
US 20070031732	A1	20070208	US 2006-396515 <--		20060403
US 7939201	B2	20110510			
PRIORITY APPLN. INFO.:			US 2005-706273P	P	20050808
			US 2005-741606P <--	P	20051202
			US 2006-396515 <--	A2	20060403

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 21 Dec 2007
AB Amorphous or partially amorphous nanoscale ion storage materials are provided. For example, lithium transition metal phosphate storage compds. are nanoscale

and amorphous or partially amorphous in an as-prepared state, or become amorphous or partially amorphous upon electrochem. intercalation or deintercalation by lithium. These nanoscale ion storage materials are useful for producing devices such as high energy and high power storage batteries.

IT 876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
918540-46-2P, Iron lithium phosphate (FeLi0.9(PO4))
(amorphous and partially amorphous nanoscale ion storage materials for batteries)

RN 876064-87-8 HCAPLUS
CN Iron lithium phosphate (FeLi0.95(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.95	7439-93-2
Fe	1	7439-89-6

RN 918540-46-2 HCAPLUS
CN Iron lithium phosphate (FeLi0.9(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.9	7439-93-2
Fe	1	7439-89-6

INCL 429052000; 423305000; 423306000; 429220000; 429221000; 429223000; 429224000; 429231500; 429231800; 429231950
IPCI H01M0004-40 [I,A]; C01B0025-26 [I,A]; H01M0004-50 [I,A]; H01M0004-58 [I,A]; H01M0004-52 [I,A]; H01M0010-44 [I,A]
IPCR H01M0004-40 [I,A]; C01B0025-26 [I,A]; H01M0004-02 [N,A]; H01M0004-136 [I,A]; H01M0004-58 [I,A]; H01M0010-0525 [I,A]; H01M0010-36 [I,A]; H01M0010-44 [I,A]
NCL 429/052.000; 423/305.000; 423/306.000; 429/220.000; 429/221.000; 429/223.000; 429/224.000; 429/231.500; 429/231.800; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT Battery cathodes
Secondary batteries
Surface area
(amorphous and partially amorphous nanoscale ion storage materials for batteries)
IT 7439-93-2DP, Lithium, transition metal phosphate 15365-14-7P, Iron lithium phosphate FeLiPO4 697756-76-6P, Iron lithium phosphate FeLi0.5PO4 876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4)) 918540-46-2P, Iron lithium phosphate (FeLi0.9(PO4)) 960373-48-2P, Iron lithium manganese niobium phosphate (Fe0.3Li0.99Mn0.7Nb0.01(PO4))
(amorphous and partially amorphous nanoscale ion storage materials for batteries)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L76 ANSWER 8 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:912347 HCAPLUS Full-text
DOCUMENT NUMBER: 147:280852
TITLE: Nanoscale ion storage materials

INVENTOR(S): Chiang, Yet-Ming; Gozdz, Antoni S.; Payne, Martin W.
PATENT ASSIGNEE(S): A123 Systems, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 49pp., Cont.-in-part of U.S. Ser. No. 396,515.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070190418	A1	20070816	US 2007-672931 <--	20070208
US 20070031732	A1	20070208	US 2006-396515 <--	20060403
US 7939201	B2	20110510		
WO 2008109209	A2	20080912	WO 2008-US52584	20080131
WO 2008109209	A3	20081204		
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
KR 2009109124	A	20091019	KR 2009-7018664	20080131
EP 2118949	A2	20091118	EP 2008-782740	20080131
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR				
JP 2010517917	T	20100527	JP 2009-549177	20080131
CN 101669234	A	20100310	CN 2008-80009462	20090923

PRIORITY APPLN. INFO.:		
US 2005-706273P	P	20050808
<--		
US 2005-741606P	P	20051202
<--		
US 2006-396515	A2	20060403
<--		
US 2007-672931	A	20070208
US 2007-888929P	P	20070208
WO 2008-US52584	W	20080131

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 17 Aug 2007
AB Nanoscale ion storage materials are provided that exhibit unique properties measurably distinct from their larger scale counterparts. For example, the nanoscale materials can exhibit increased electronic conductivity, improved electromech. stability, increased rate of intercalation, and/or an extended range of solid solution Useful nanoscale materials include alkaline

transition metal phosphates, such as LiMPO4, where M is one or more transition metals. The nanoscale ion storage materials are useful for producing devices such as high energy and high power storage batteries, battery-capacitor hybrid devices, and high rate electrochromic devices.

IT 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
(nanoscale ion storage materials)

RN 714249-20-4 HCAPLUS
CN Iron lithium phosphate (FeLi0.99(PO4)) (CA INDEX NAME)

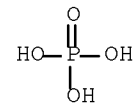
Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.99	7439-93-2
Fe	1	7439-89-6

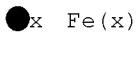
RN 876064-87-8 HCAPLUS
CN Iron lithium phosphate (FeLi0.95(PO4)) (CA INDEX NAME)

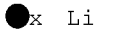
Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.95	7439-93-2
Fe	1	7439-89-6

IT 411234-54-3, Iron lithium phosphate
(nanoscale ion storage materials)

RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)







INCL 429221000; 429231950; 429050000; 423306000
IPCI H01M0004-58 [I,A]; H01M0010-44 [I,A]; C01B0025-45 [I,A]
IPCR C01B0025-45 [I,A]; H01M0004-02 [N,A]; H01M0004-136 [I,A]; H01M0004-58 [I,A]; H01M0010-0525 [I,A]; H01M0010-36 [I,A]; H01M0010-44 [I,A]
NCL 429/221.000; 423/306.000; 429/050.000; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76

IT Secondary batteries
(lithium; nanoscale ion storage materials)

IT Battery cathodes
Electrochromic devices

Nanostructured materials
Open circuit potential
Surface area
(nanoscale ion storage materials)
IT 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
(nanoscale ion storage materials)
IT 7664-38-2D, Phosphoric acid, lithium transition metal compound
15365-14-7D, Iron lithium phosphate felipo4, lithium-deficient
411234-54-3, Iron lithium phosphate
(nanoscale ion storage materials)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

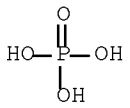
L76 ANSWER 9 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:328346 HCAPLUS Full-text
DOCUMENT NUMBER: 146:362058
TITLE: Manufacture of cathode active mass for secondary nonaqueous electrolyte batteries
INVENTOR(S): Nakanishi, Shinji; Yoshizawa, Hiroshi; Okada, Shigeto
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Kyushu University
SOURCE: Jpn. Kokai Tokkyo Koho, 19pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

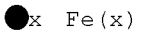
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007073360	A	20070322	JP 2005-259604 <--	20050907
PRIORITY APPLN. INFO.:			JP 2005-259604 <--	20050907

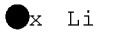
ED Entered STN: 22 Mar 2007
AB The active mass is manufactured by mixing raw materials of Li2MPO4F (M is ≥1 transition metal element selected from Fe, Co, Mn, and Ni); and fusing the raw material mixture
IT 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)
RN 484039-86-3 HCAPLUS
CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

IT 411234-54-3, Iron lithium phosphate
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)
RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)







IPCI H01M0004-58 [I,A]; H01M0010-40 [I,A]; C01B0025-45 [I,A]
IPCR H01M0004-58 [I,A]; C01B0025-45 [I,A]; H01M0010-40 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery cathodes
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)
IT 13826-59-0P, Lithium manganese phosphate (LiMnPO4) 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4)) 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4))
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)
IT 1314-56-3, Phosphorus oxide (P2O5), reactions 1345-25-1, Iron oxide (FeO), reactions 7789-24-4, Lithium fluoride, reactions 12057-24-8, Lithium oxide (Li2O), reactions 13824-63-0, Cobalt lithium phosphate (CoLiPO4) 13977-83-8, Lithium nickel phosphate (LiNiPO4) 411234-54-3, Iron lithium phosphate
(manufacture of cathode active mass containing lithium transition metal phosphate composites for secondary lithium batteries)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L76 ANSWER 10 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:286942 HCAPLUS Full-text
DOCUMENT NUMBER: 146:299360
TITLE: Cathode material for manufacturing a rechargeable battery
INVENTOR(S): Yang, Chih-Wei
PATENT ASSIGNEE(S): Aquire Energy Co., Ltd., Taiwan
SOURCE: U.S. Pat. Appl. Publ., 17pp., Cont.-in-part of U.S. Ser. No. 222,569.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 9
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070059598	A1	20070315	US 2006-510096	20060825

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US 7700236	B2	20100420		
US 20060257307	A1	20061116	US 2005-222569	20050909
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AT 385999	T	20080315	AT 2005-256174	20051003
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US 20070207385	A1	20070906	US 2007-747746	20070511
			<--	
US 7781100	B2	20100824		
US 20070238021	A1	20071011	US 2007-764686	20070618
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US 7799457	B2	20100921		
US 20080107967	A1	20080508	US 2007-940283	20071114
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US 7887954	B2	20110215		
US 20080138710	A1	20080612	US 2007-940276	20071114
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PRIORITY APPLN. INFO.:			US 2005-222569	A2 20050909
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			TW 2005-115023	A 20050510
			<--	
			EP 2005-256174	A 20051003
			<--	
			CN 2006-10080365	A 20060511
			<--	
			US 2006-510096	A2 20060825
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			US 2006-518805	A2 20060911
			<--	
			US 2007-747746	A2 20070511
			US 2007-764629	A2 20070618

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 16 Mar 2007

AB A cathode material having olivine or NASICON structures and includes micrometer-sized secondary particles having a particle size of 1-50 μm. Each of the micrometer-sized secondary particles is composed of crystalline nanometer-sized primary particles of a metal compound having a particle size of 10-500 nm. The metal compound has a formula A3xM2y(PO4)3 with A being a Group IA, IIA, or IIIA element, M being a 2nd metal element from Groups IIA, IIIA, or a transition element, and 0<x≤1.2, and 0<y≤1.6. Carbon particles adhere to the surface of the crystalline nanometer-sized primary particles. The cathode material has a BET sp. surface area of 5-100 m2/g. The cathode material is coated on an electrode plate. The cathode material contains a binder, such as styrene-butadiene rubber or polyvinylidene fluoride. The cathode material contains a thickener, especially CM-cellulose.

IT 928163-03-5P
(cathode material; cathode material for manufacturing rechargeable battery)

RN 928163-03-5 HCAPLUS

CN Aluminum iron lithium magnesium phosphate (Al0.01Fe0.98LiMg0.01(PO4)) (CA INDEX NAME)

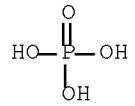
Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.01	7439-95-4
Li	1	7439-93-2

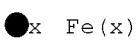
Fe	0.98	7439-89-6
Al	0.01	7429-90-5

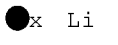
INCL 429209000; 423306000; 429217000; 252182100; 429232000
IPCI C01B0025-26 [I,A]; H01M0004-02 [I,A]; H01M0004-62 [I,A]; H01M0004-58 [I,A]; H01M0004-36 [I,A]; C01B0025-45 [N,A]
IPCR C01B0025-26 [I,A]; H01M0004-02 [N,A]; H01M0004-136 [I,A]; H01M0004-58 [I,A]; H01M0004-62 [I,A]; C01B0025-45 [N,A]; H01M0004-36 [I,A]
NCL 429/209.000; 252/182.100; 423/306.000; 429/217.000; 429/232.000; 429/218.100; 429/220.000; 429/221.000; 429/223.000; 429/224.000; 429/229.000; 429/231.500; 429/231.600; 429/231.900; 429/231.950
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
ST cathode material rechargeable battery lithium ferrous phosphate
IT Styrene-butadiene rubber, uses
(cathode containing; cathode material for manufacturing rechargeable battery)
IT Battery cathodes
NASICONs
Secondary batteries
(cathode material for manufacturing rechargeable battery)
IT Fluoropolymers, uses
(cathode material for manufacturing rechargeable battery)
IT Charcoal
(cathode material for manufacturing rechargeable battery)
IT 7440-44-0, Carbon, uses
(anode, cathode containing; cathode material for manufacturing rechargeable battery)
IT 9004-32-4, Carboxymethyl cellulose
(cathode containing; cathode material for manufacturing rechargeable battery)
IT 24937-79-9, Polyvinylidene fluoride
(cathode containing; cathode material for manufacturing rechargeable battery)
IT 50-99-7, Glucose, processes 57-50-1, Sucrose, processes 77-92-9, Citric acid, processes 144-62-7, Oxalic acid, processes
(cathode material for manufacturing rechargeable battery)
IT 1310-65-2, Lithium hydroxide 7439-89-6, Iron, reactions 7446-70-0, Aluminum chloride, reactions 7664-38-2, Phosphoric acid, reactions 7705-08-0, Ferric chloride, reactions 7786-30-3, Magnesium chloride, reactions 10421-48-4, Ferric nitrate
(cathode material for manufacturing rechargeable battery)
IT 15365-14-7P, Iron lithium phosphate felipo4 928163-03-5P
(cathode material; cathode material for manufacturing rechargeable battery)
IT 7429-90-5, Aluminum, uses
(electrode plate; cathode material for manufacturing rechargeable battery)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
(electrolyte containing; cathode material for manufacturing rechargeable battery)
IT 21324-40-3, Lithium hexafluorophosphate

(electrolyte; cathode material for manufacturing rechargeable battery)
IT 9003-55-8
(styrene-butadiene rubber, cathode containing; cathode material for manufacturing rechargeable battery)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

L76 ANSWER 11 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:215499 HCAPLUS Full-text
DOCUMENT NUMBER: 147:238686
TITLE: Electrochemical properties of LiFe1-xMgxPO4 for cathode of lithium ion battery
AUTHOR(S): Zhang, Bao; Li, Xin-hai; Luo, Wen-bin; Wang, Zhi-xing
CORPORATE SOURCE: School of Metallurgy Science and Engineering, Central South University, Changsha, 410083, Peop. Rep. China
SOURCE: Zhongnan Daxue Xuebao, Ziran Kexueban (2006), 37(6), 1094-1097
CODEN: ZDXZAC; ISSN: 1672-7207
PUBLISHER: Zhongnan Daxue Xuebao Ziran Kexueban Bianji Weiyuanhui
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
ED Entered STN: 28 Feb 2007
AB LiFe1-xMgxPO4 (x = 0.01, 0.05, 0.10, 0.15) was synthesized by doping Mg into LiFePO4. The effect of the doping amount of Mg on the electrochem. performances of LiFe1-xMgxPO4 was investigated. The results showed that the Mg-doped LiFePO4 had higher charge and discharge capacities and better cycle performance than LiFePO4. The initial specific discharge capacity of LiFe0.85Mg0.15PO4 was 125.6 mA · h/g, and the discharge capacity remained 123.0 mA · h/g after 6 cycles. The electronic conductivity could be increased by a factor of 1 x 106 after doping Mg. Compared with LiFePO4, the electrochem. performance of Mg-doped sample were greatly improved.
IT 411234-54-3, Iron lithium phosphate
(electrochem. properties of LiFe1-xMgxPO4 for cathode of lithium ion battery)
RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)







IT 331622-66-3P, Iron lithium magnesium phosphate (Fe0.85LiMg0.15(PO4)) 478819-92-0P, Iron lithium magnesium

phosphate (Fe0.99LiMg0.01(PO4)) 643752-34-5P, Iron lithium magnesium phosphate (Fe0.95LiMg0.05(PO4))
(electrochem. properties of LiFe1-xMgxPO4 for cathode of lithium ion battery)

RN 331622-66-3 HCAPLUS
CN Iron lithium magnesium phosphate (Fe0.85LiMg0.15(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.15	7439-95-4
Li	1	7439-93-2
Fe	0.85	7439-89-6

RN 478819-92-0 HCAPLUS
CN Iron lithium magnesium phosphate (Fe0.99LiMg0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.01	7439-95-4
Li	1	7439-93-2
Fe	0.99	7439-89-6

RN 643752-34-5 HCAPLUS
CN Iron lithium magnesium phosphate (Fe0.95LiMg0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0.05	7439-95-4
Li	1	7439-93-2
Fe	0.95	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery cathodes
Crystal structure
Electric conductivity
Heat treatment
(electrochem. properties of LiFe1-xMgxPO4 for cathode of lithium ion battery)
IT 411234-54-3, Iron lithium phosphate
(electrochem. properties of LiFe1-xMgxPO4 for cathode of lithium ion battery)
IT 331622-66-3P, Iron lithium magnesium phosphate (Fe0.85LiMg0.15(PO4)) 478819-92-0P, Iron lithium magnesium phosphate (Fe0.99LiMg0.01(PO4)) 632286-77-2P 643752-34-5P , Iron lithium magnesium phosphate (Fe0.95LiMg0.05(PO4))
(electrochem. properties of LiFe1-xMgxPO4 for cathode of lithium ion battery)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L76 ANSWER 12 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2007:146728 HCAPLUS Full-text
DOCUMENT NUMBER: 146:209794
TITLE: Nanoscale ion storage materials
INVENTOR(S): Chiang, Yet-Ming; Gozdz, Antoni S.; Payne, Martin W.
PATENT ASSIGNEE(S): A123 Systems, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 38 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070031732	A1	20070208	US 2006-396515 <--	20060403
US 7939201	B2	20110510		
WO 2008039170	A2	20080403	WO 2006-US30579 <--	20060803
WO 2008039170	A3	20081113		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, ME, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
EP 1938402	A2	20080702	EP 2006-851633 <--	20060803
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JP 2009516631	T	20090423	JP 2008-536570 <--	20060803
WO 2007064934	A2	20070607	WO 2006-US46085 <--	20061201
WO 2007064934	A3	20080515		
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RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA				
US 20070292747	A1	20071220	US 2006-607525 <--	20061201
EP 1972018	A2	20080924	EP 2006-844738 <--	20061201

R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, RS

JP 2009518262	T	20090507	JP 2008-543508 <--	20061201
US 20070190418	A1	20070816	US 2007-672931 <--	20070208
KR 2008045170	A	20080522	KR 2008-7005568 <--	20080306
CN 101427402	A	20090506	CN 2006-80035978 <--	20080328
KR 2008074208	A	20080812	KR 2008-7016190 <--	20080702
CN 101361210	A	20090204	CN 2006-80051496 <--	20080721

PRIORITY APPLN. INFO.:

US 2005-706273P <--	P	20050808
US 2005-741606P <--	P	20051202
US 2006-396515 <--	A	20060403
WO 2006-US30579 <--	W	20060803
WO 2006-US46085 <--	W	20061201

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 09 Feb 2007

AB Nanoscale ion storage materials are provided that exhibit unique properties measurably distinct from their larger scale counterparts. For example, the nanoscale materials can exhibit increased electronic conductivity, improved electromech. stability, increased rate of intercalation, and/or an extended range of solid solution Useful nanoscale materials include alkaline transition metal phosphates, such as LiMPO4, where M is one or more transition metals. The nanoscale ion storage materials are useful for producing devices such as high energy and high power storage batteries, battery-capacitor hybrid devices, and high rate electrochromic devices.

IT 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4))
876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
(nanoscale ion storage materials)

RN 714249-20-4 HCAPLUS

CN Iron lithium phosphate (FeLi0.99(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.99	7439-93-2
Fe	1	7439-89-6

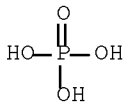
RN 876064-87-8 HCAPLUS

CN Iron lithium phosphate (FeLi0.95(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.95	7439-93-2
Fe	1	7439-89-6

IT 411234-54-3

(nanoscale ion storage materials)
RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)



INCL 429231950; 423306000
IPCI H01M0004-58 [I,A]; C01B0025-45 [I,A]; H01M0004-58 [I,A]
IPCR C01B0025-45 [I,A]; H01M0004-02 [N,A]; H01M0004-136 [I,A]; H01M0004-58 [I,A]; H01M0010-0525 [I,A]; H01M0010-36 [I,A]
NCL 429/231.950; 423/306.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 74, 76
IT Battery cathodes
Electrochromic devices
Primary batteries
(nanoscale ion storage materials)
IT 15365-14-7P, Iron lithium phosphate felipo4 714249-20-4P, Iron lithium phosphate (FeLi0.99(PO4)) 876064-87-8P, Iron lithium phosphate (FeLi0.95(PO4))
(nanoscale ion storage materials)
IT 110213-39-3, Lithium titanium phosphate 411234-54-3 471294-34-5 471294-35-6 471294-38-9 471294-40-3 471294-47-0
(nanoscale ion storage materials)
OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

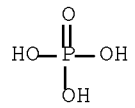
L76 ANSWER 13 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:786237 HCAPLUS Full-text
DOCUMENT NUMBER: 145:400831
TITLE: Small Polaron Hopping in LixFePO4 Solid Solutions: Coupled Lithium-Ion and Electron Mobility
AUTHOR(S): Ellis, Brian; Perry, Laura K.; Ryan, Dominic H.; Nazar, L. F.
CORPORATE SOURCE: University of Waterloo, Waterloo, ON, N2L 3G1, Can.
SOURCE: Journal of the American Chemical Society (2006), 128(35), 11416-11422
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 10 Aug 2006
AB Transition metal phosphates such as LiFePO4 are promising electrode materials for Li-ion batteries because of their energy storage capacity combined with

electrochem. and thermal stability. A key issue in these materials is to unravel the factors governing electron and ion transport within the lattice. Li extraction from LiFePO4 results in a 2-phase mixture with FePO4 that limits power characteristics owing to low mobility of the phase boundary. This boundary is a consequence of low solubility of the parent phases, and its mobility is impeded by slow migration of the charge carriers. In principle, these limitations can be diminished in a solid solution, LixFePO4. Electron delocalization in the solid solution phases formed at elevated temperature is due to rapid small polaron hopping and is unrelated to the band gap. Exptl. evidence for a correlation between electron and Li delocalization events suggests that they are coupled. The frequency sensitivity of Moessbauer measurements provides direct insight into the electron hopping rate.

IT 411234-54-3, Iron lithium phosphate
(small polaron hopping in LixFePO4 solid solns. - coupled lithium-ion and electron mobility)

RN 411234-54-3 HCAPLUS

CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)



IT 911448-76-5, Iron lithium phosphate (FeLi0.55(PO4))
(small polaron hopping in LixFePO4 solid solns. - coupled lithium-ion and electron mobility)

RN 911448-76-5 HCAPLUS

CN Iron lithium phosphate (FeLi0.55(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.55	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 65, 76

IT Battery cathodes
(small polaron hopping in LixFePO4 cathode material for lithium batteries)

IT 411234-54-3, Iron lithium phosphate
(small polaron hopping in LixFePO4 solid solns. - coupled lithium-ion and electron mobility)

IT 729612-48-0, Iron lithium phosphate (FeLi0.25PO4) 729612-50-4, Iron lithium phosphate (FeLi0.75PO4) 911448-76-5, Iron lithium phosphate (FeLi0.55(PO4))
(small polaron hopping in LixFePO4 solid solns. - coupled

lithium-ion and electron mobility)
OS.CITING REF COUNT: 57 THERE ARE 57 CAPLUS RECORDS THAT CITE THIS RECORD (57 CITINGS)
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 14 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:484617 HCAPLUS Full-text
DOCUMENT NUMBER: 145:400782
TITLE: A new insight into the LiFePO4 delithiation process
AUTHOR(S): Lemos, V.; Guerini, S.; Mendes Filho, J.; Lala, S. M.; Montoro, L. A.; Rosolen, J. M.
CORPORATE SOURCE: Departamento de Fisica, Centro de Ciencias, Universidade Federal do Ceara, Ceara, 60455-970, Brazil
SOURCE: Solid State Ionics (2006), 177(11-12), 1021-1025
CODEN: SSIOD3; ISSN: 0167-2738
PUBLISHER: Elsevier B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 25 May 2006
AB Raman and FTIR measurements of LixM0.03Fe0.97PO4, M = Cr, Cu, Al, Ti were performed. The spectra of delithiated samples, for a low content of Li, are practically the same as those of LiFePO4. For a high content in Li the spectra repeat that of FePO4. In the case of the Li0.11FePO4 the spectra cannot be reproduced by the superposition of the end member profiles. An addnl. broad band contribution is present in Raman and IR spectra, probably due to the disordered structure of the mixture The accepted 2-phase model for the delithiation process in LiFePO4 is incorrect and the model should be revised to include the new phase as detected here for a particular level of Li extraction close to that of complete oxidation of the Fe2+ ions to Fe3+.
IT 865443-06-7, Iron lithium phosphate (FeLi0.11(PO4))
(delithiation of LiFePO4 cathode material for lithium batteries)
RN 865443-06-7 HCAPLUS
CN Iron lithium phosphate (FeLi0.11(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.11	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST iron lithium phosphate cathode delithiation lithium battery
IT Battery cathodes
(delithiation of LiFePO4 cathode material for lithium batteries)
IT Secondary batteries
(lithium; delithiation of LiFePO4 cathode material for lithium batteries)
IT Intercalation
(retro, electrochem.; delithiation of LiFePO4 cathode material for lithium batteries)

IT 15365-14-7, Iron lithium phosphate (FeLiPO4)
(delithiation of LiFePO4 cathode material for lithium batteries)
IT 7439-93-2, Lithium, processes 865443-06-7, Iron lithium phosphate (FeLi0.11(PO4)) 865443-10-3, Chromium iron lithium phosphate (Cr0.03Fe0.97Li0.04(PO4)) 865443-11-4D, Chromium iron lithium phosphate (Cr0.03Fe0.97Li0.05(PO4)), lithium deficient 911379-23-2, Copper iron lithium phosphate (Cu0.03Fe0.97Li(PO4)) 911379-24-3, Iron lithium titanium phosphate (Fe0.97LiTi0.03(PO4)) 911379-25-4, Chromium iron lithium phosphate (Cr0.03Fe0.97Li(PO4)) 911379-26-5, Aluminum iron lithium phosphate (Al0.03Fe0.97Li(PO4)) 911379-27-6D, Copper iron lithium phosphate (Cu0.03Fe0.97Li0.05(PO4)), lithium deficient 911379-28-7D, Iron lithium titanium phosphate (Fe0.97Li0.05Ti0.03(PO4)), lithium deficient 911379-30-1D, Aluminum iron lithium phosphate (Al0.03Fe0.97Li0.05(PO4)), lithium deficient
(delithiation of LiFePO4 cathode material for lithium batteries)
OS.CITING REF COUNT: 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 15 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:443021 HCAPLUS Full-text
DOCUMENT NUMBER: 144:436133
TITLE: Lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors and their anodes
INVENTOR(S): Ukaji, Masaya; Mino, Shinji; Shibano, Yasuyuki; Ito, Shuji
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006120337	A	20060511	JP 2004-304089 <--	20041019
PRIORITY APPLN. INFO.:			JP 2004-304089 <--	20041019

ED Entered STN: 12 May 2006
AB The anodes consist of Li-precipitating conductive substrates and Li ion-conductive layers represented by Lx1PTy1Oz1 or Lx2MOy2Nz2 [T = Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Nb, Mo, Ru, Ag, Ta, W, Pt, and/or Au; 2.0 ≤ x1 ≤ 7.0; 0.01 ≤ y1 ≤ 1.0; 3.5 ≤ z1 ≤ 8.0; M = Si, B, Ge, Al, C, Ga, and/or S; plural range sets of (x2, y2, z2) are given] and being formed on the substrate surface. Lithium secondary batteries employing the anodes suppress rise in anode impedance and show long cycle life.
IT 782495-50-5P, Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4))
(anodes; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
RN 782495-50-5 HCAPLUS
CN Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

IPCI H01M0004-02 [I,A]; H01M0004-40 [I,A]; H01M0004-62 [I,A]; H01M0010-40 [I,A]
IPCR H01M0004-02 [I,A]; H01M0004-40 [I,A]; H01M0004-62 [I,A]; H01M0010-40 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Secondary batteries
(button-type; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
IT Secondary batteries
(lithium; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)
IT 782495-23-2P, Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) 782495-24-3P, Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) 782495-25-4P, Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) 782495-26-5P, Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) 782495-27-6P, Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) 782495-28-7P, Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) 782495-29-8P, Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) 782495-30-1P, Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) 782495-31-2P, Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) 782495-32-3P, Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) 782495-33-4P, Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) 782495-34-5P, Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) 782495-35-6P, Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) 782495-36-7P, Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) 782495-37-8P, Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) 782495-38-9P, Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) 782495-39-0P, Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) 782495-41-4P, Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) 782495-42-5P, Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) 782495-43-6P, Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9) 782495-44-7P, Lithium tungsten metaphosphate oxide (Li2.8W0.5(PO3)O0.9) 782495-47-0P, Lithium vanadium oxide phosphate (Li2.8V0.2O0.4(PO4)) 782495-48-1P, Chromium lithium oxide phosphate (Cr0.2Li2.8O0.2(PO4)) 782495-49-2P, Lithium manganese oxide phosphate (Li2.8Mn0.2O0.3(PO4)) 782495-50-5P, Iron lithium oxide phosphate (Fe0.2Li2.8O0.17(PO4)) 782495-51-6P, Cobalt lithium oxide phosphate (Co0.2Li2.8O0.17(PO4)) 782495-52-7P, Lithium nickel oxide phosphate (Li2.8Ni0.2O0.1(PO4)) 782495-53-8P, Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) 782495-54-9P, Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) 782495-55-0P, Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) 782495-56-1P, Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) 782495-57-2P, Lithium silver phosphate (Li2.8Ag0.2(PO4)) 782495-58-3P, Lithium tantalum oxide phosphate (Li2.8Ta0.2O0.4(PO4)) 782495-59-4P, Lithium tungsten oxide phosphate (Li2.8W0.2O0.5(PO4)) 782495-60-7P, Lithium titanium oxide phosphate (Li4Ti0.25O(PO4)) 782495-61-8P, Lithium vanadium oxide phosphate (Li3.75V0.25O(PO4))

782495-62-9P, Chromium lithium oxide phosphate (Cr0.25Li3.5O(PO4))
782495-63-0P, Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4))
782495-64-1P, Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4))
782495-65-2P, Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4))
782495-66-3P, Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4))
782495-67-4P, Lithium tungsten oxide phosphate (Li3.5W0.25O(PO4))
782495-69-6P, Lithium tungsten oxide phosphate (Li3.02W0.01O0.04(PO4))
782495-70-9P, Lithium tungsten oxide phosphate (Li3.2W0.1O0.4(PO4))
782495-72-1P, Lithium tungsten oxide phosphate (Li3.66W0.33O1.32(PO4))
782495-74-3P, Lithium tungsten oxide phosphate (Li5WO4(PO4))
782495-76-5P, Lithium tungsten oxide phosphate (Li7W2O8(PO4))
816415-85-7P, Boron lithium nitride oxide (BLi0.8N0.3O1.45)
816416-34-9P, Germanium lithium nitride oxide (GeLi1.8N0.3O2.45)
816416-38-3P, Aluminum lithium nitride oxide (AlLi0.8N0.3O1.45)
816416-40-7P, Aluminum lithium nitride oxide (AlLi4.8N0.3O3.45)
816416-44-1P, Gallium lithium nitride oxide (GaLi0.8N0.3O1.45)
816416-46-3P, Lithium sulfur nitride oxide (Li1.8SN0.3O3.45)
816416-50-9P, Boron lithium nitride oxide silicate (B0.5Li2.3N0.3O0.45(SiO4)0.5) 816416-52-1P, Germanium lithium nitride oxide silicate (Ge0.5Li3.8N0.3O1.45(SiO4)0.5) 816416-54-3P, Carbon lithium nitride oxide silicate (C0.5Li2.8N0.3O2.95(SiO4)0.5)
816416-56-5P, Lithium silicon nitride oxide sulfate (Li2.8Si0.5N0.3O1.45(SO4)0.5) 816416-58-7P, Germanium lithium borate nitride oxide (Ge0.5Li2.3(BO3)0.5N0.3O0.95) 816416-60-1P, Aluminum lithium borate nitride oxide (Al0.5Li2.8(BO3)0.5N0.3O0.95)
816416-62-3P, Boron lithium carbonate nitride oxide (B0.5Li1.3(CO3)0.5N0.3O0.45) 816416-64-5P, Gallium lithium borate nitride oxide (Ga0.5Li0.8(BO2)0.5N0.3O0.45) 816416-66-7P, Boron lithium nitride oxide sulfate (B0.5Li1.3N0.3O0.45(SO4)0.5)
816416-68-9P 816416-70-3P, Germanium lithium nitride oxide sulfate (Ge0.5Li2.8N0.3O1.45(SO4)0.5) 816416-72-5P, Aluminum gallium lithium nitride oxide (Al0.5Ga0.5Li2.8N0.3O2.45) 816416-74-7P, Carbon lithium nitride oxide sulfate (C0.5Li1.8N0.3O0.95(SO4)0.5)
882681-95-0P, Lithium titanium oxide phosphate (Li2.8Ti0.2O0.3(PO4))
882682-19-1P, Lithium zirconium oxide phosphate (Li4Zr0.25O(PO4))
882682-64-6P, Lithium silicon nitride oxide (Li1.8SiN0.5O2.15)
884739-67-7P, Lithium silicon nitride oxide (Li1.8SiN0.3O2.45)
885122-24-7P, Aluminum lithium nitride oxide (AlLi1.8N0.3O2.45)
(anodes; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)

IT 12190-79-3, Lithium cobaltate (LiCoO2)
(cathode active mass; manufacture of lithium secondary batteries having wet-stable oxide or nitride-based ionic conductors)

L76 ANSWER 16 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:399666 HCAPLUS Full-text
DOCUMENT NUMBER: 145:127452
TITLE: Room-temperature miscibility gap in LixFePO4
AUTHOR(S): Yamada, Atsuo; Koizumi, Hiroshi; Nishimura, Shin-Ichi; Sonoyama, Noriyuki; Kanno, Ryoji; Yonemura, Masao; Nakamura, Tatsuya; Kobayashi, Yo
CORPORATE SOURCE: Department of Electronic Chemistry, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, Midori, Yokohama, 226-8502, Japan
SOURCE: Nature Materials (2006), 5(5), 357-360
CODEN: NMAACR; ISSN: 1476-1122
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal

LANGUAGE: English
ED Entered STN: 02 May 2006
AB The rechargeable lithium-ion cell is an advanced energy-storage system. However, high cost, safety hazards, and chemical instability prohibit its use in large-scale applications. An alternative cathode material, LiFePO4, solves these problems, but has a kinetic problem involving strong electron/hole localization. One reason for this is believed to be the limited carrier d. in the fixed monovalent Fe3+PO4/LiFe2+PO4 two-phase electrode reaction in LixFePO4. Here, the authors provide exptl. evidence that LixFePO4, at room temperature, can be described as a mixture of the Fe3+/Fe2+ mixed-valent intermediate LiαFePO4 and Li1-βFePO4 phases. Using powder neutron diffraction, the site occupancy nos. for lithium in each phase were refined to be α 0.05 and 1-β = 0.89. The corresponding solid solution ranges outside the miscibility gap (0 < x<α,1-β < x<1) were detected by the anomaly in the configurational entropy, and also by the deviation of the open-circuit voltage from the constant equilibrium potential. These findings encourage further improvement of this important class of compds. at ambient temps.
IT 897030-96-5, Iron lithium phosphate (FeLi0.05(PO4))
897030-97-6, Iron lithium phosphate (FeLi0.89(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
RN 897030-96-5 HCAPLUS
CN Iron lithium phosphate (FeLi0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.05	7439-93-2
Fe	1	7439-89-6

RN 897030-97-6 HCAPLUS
CN Iron lithium phosphate (FeLi0.89(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.89	7439-93-2
Fe	1	7439-89-6

IT 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
RN 198782-39-7 HCAPLUS
CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 68, 72, 75
ST miscibility iron lithium phosphate cathode phase compn mixed valence; secondary lithium battery cathode insertion phase

change iron phosphate
IT Carbon black, uses
(LION; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Insertion reaction
(electrochem.; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Secondary batteries
(lithium; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Calorimetry
(microcalorimetry; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Crystal structure determination methods
(neutron diffractometric; room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Battery cathodes
Cyclic voltammetry
Electric potential
Miscibility
Open circuit potential
Phase composition
Phase diagram
(room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT Fluoropolymers, uses
(room-temperature miscibility gap in LixFePO4 and use in secondary lithium battery cathodes)
IT 7439-93-2, Lithium, uses
(foil; room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 7429-90-5, Aluminum, uses
(mesh; room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 897030-96-5, Iron lithium phosphate (FeLi0.05(PO4))
897030-97-6, Iron lithium phosphate (FeLi0.89(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
9002-84-0, Polytetrafluoroethene 21324-40-3, Lithium hexafluorophosphate 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4))
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 10045-86-0P, Iron phosphate (FePO4)
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 15365-14-7P, Iron lithium phosphate (FeLiPO4)
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 697756-76-6P, Iron lithium phosphate (FeLi0.5PO4)
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
IT 10377-51-2, Lithium iodide 13826-86-3, Nitronium tetrafluoroborate
(room-temperature miscibility gap in lithium iron phosphate and use in secondary lithium battery cathodes)
OS.CITING REF COUNT: 121 THERE ARE 121 CAPLUS RECORDS THAT CITE THIS RECORD (122 CITINGS)
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L76 ANSWER 17 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:337615 HCAPLUS Full-text
DOCUMENT NUMBER: 144:394637
TITLE: Solid electrolytes based on lithium hafnium phosphate for active metal anode protection
INVENTOR(S): Nimon, Yevgeniy S.; De Jonghe, Lutgard C.; Visco, Steven J.
PATENT ASSIGNEE(S): Polyplus Battery Company, USA
SOURCE: U.S. Pat. Appl. Publ., 16 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20060078790	A1	20060413	US 2005-245472 <--	20051005
PRIORITY APPLN. INFO.:			US 2004-616325P P <--	20041005

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 13 Apr 2006
AB Active metal electrochem. structure, in particular an active metal neg. electrode (anode) protected with an ionically conductive protective architecture incorporating a glassy, ceramic or glass-ceramic solid electrolyte material based on lithium hafnium phosphate, and associated electrochem. devices and methods, provides advantages over conventional structures. The protective architecture prevents the active metal from deleterious reaction with the environment on the other (cathode) side of the architecture, which may include aqueous, air or organic liquid electrolytes and/or electrochem. active materials.
IT 882691-96-5, Hafnium iron lithium phosphate
(can be conductive glass or ceramic electrolyte material; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
RN 882691-96-5 HCAPLUS
CN Hafnium iron lithium phosphate (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	x	14265-44-2
Hf	x	7440-58-6
Li	x	7439-93-2
Fe	x	7439-89-6

INCL 429137000; 429246000; 429303000
IPCI H01M0002-16 [I,A]; H01M0002-18 [I,A]
IPCR H01M0002-16 [I,A]; H01M0002-18 [I,A]
NCL 429/137.000; 429/246.000; 429/303.000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT Halides
Nitrides
(contacts anode; solid electrolytes based on lithium hafnium

phosphate for active metal anode protection)
IT Battery electrolytes
Calcination
Cathodic protection
Ceramics
Glass ceramics
Grinding (size reduction)
Primary batteries
Primary battery separators
Secondary batteries
Secondary battery separators
(solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT 882691-94-3, Chromium hafnium lithium phosphate 882691-95-4, Hafnium indium lithium phosphate 882691-96-5, Hafnium iron lithium phosphate 882691-97-6, Hafnium lithium tantalum phosphate 882691-98-7, Hafnium lithium scandium phosphate 882691-99-8, Hafnium lithium lutetium phosphate 882692-00-4, Hafnium lithium yttrium phosphate
(can be conductive glass or ceramic electrolyte material; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
IT 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 12057-29-3, Trilithium phosphide 26134-62-3, Trilithium nitride 668998-68-3, Lithium phosphorus nitride oxide (LiPNO)
(contacts anode; solid electrolytes based on lithium hafnium phosphate for active metal anode protection)
OS.CITING REF COUNT: 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

L76 ANSWER 18 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2006:216209 HCAPLUS Full-text
DOCUMENT NUMBER: 144:277160
TITLE: Cathode materials and their manufacture for secondary nonaqueous-electrolyte lithium ion batteries for automobiles
INVENTOR(S): Ito, Takanori; Saito, Takazane; Horie, Hideaki
PATENT ASSIGNEE(S): Nissan Motor Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006066081	A	20060309	JP 2004-243799 <--	20040824
PRIORITY APPLN. INFO.:			JP 2004-243799 <--	20040824

ED Entered STN: 10 Mar 2006
AB The title cathode materials contain Li Fe phosphate compound particles on which a Li compound is attached. The title automobiles are equipped with secondary batteries or their assemblies using the above cathode materials. The title process comprises steps of firing a mixture containing an Fe compound chosen from Fe sulfate, Fe hydroxide, or their hydrate, a Li compound, and a P compound to give particles and then attaching a Li compound

on surfaces of the particles. The cathode materials suppress increase of internal resistance.

IT 877630-10-9P, Iron lithium oxide phosphate (Fe0.98Li1.1O0.04(PO4)0.99)
(cathode; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

RN 877630-10-9 HCAPLUS

CN Iron lithium oxide phosphate (Fe0.98Li1.1O0.04(PO4)0.99) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.04	17778-80-2
O4P	0.99	14265-44-2
Li	1.1	7439-93-2
Fe	0.98	7439-89-6

IPCI H01M0004-58 [I,A]; C01B0025-45 [I,A]; H01M0002-10 [I,A]; H01M0004-02 [I,A]; H01M0004-62 [I,A]; H01M0010-40 [I,A]

IPCR H01M0004-58 [I,A]; C01B0025-45 [I,A]; H01M0002-10 [I,A]; H01M0004-02 [I,A]; H01M0004-62 [I,A]; H01M0010-40 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium iron phosphate particle coating cathode battery automobile

IT Electric vehicles
(automobiles; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

IT Automobiles
(elec.; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

IT Secondary batteries
(lithium; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

IT Battery cathodes
(manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

IT 877630-10-9P, Iron lithium oxide phosphate (Fe0.98Li1.1O0.04(PO4)0.99)
(cathode; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

IT 107-15-3D, Ethylenediamine, compds. with lithium acetylide 546-89-4, Lithium acetate 553-54-8, Lithium benzoate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1070-75-3D, Lithium acetylide (Li2(C2)), compds. with ethylenediamine 1310-65-2, Lithium hydroxide 2922-61-4, Lithium pyruvate 4485-12-5, Lithium stearate 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 7790-69-4, Lithium nitrate 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 30903-88-9, Tartaric acid lithium salt 159076-65-0, Lithium phosphorus silicon oxide sulfide 236388-73-1, Lithium silicide sulfide 658038-32-5, Boron lithium oxide 852709-57-0, Lithium metaphosphate nitride oxide (Li2.9(PO3)N0.36O0.3) 877630-13-2, Boron lithium iodide oxide
(coating; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

IT 10124-31-9, Ammonium phosphate 10124-49-9, Iron sulfate
(lithium iron phosphate from; manufacture of cathodes containing coated lithium iron phosphate for secondary lithium ion batteries for automobiles)

L76 ANSWER 19 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2005:1090539 HCAPLUS Full-text
DOCUMENT NUMBER: 145:30729
TITLE: Lithium Insertion in the High-Pressure Polymorph of FePO4
AUTHOR(S): Arroyo-de Dompablo, M. E.; Gallardo-Amores, J. M.; Amador, U.
CORPORATE SOURCE: Departamento de Quimica, Universidad San Pablo-CEU, Madrid, Spain
SOURCE: Electrochemical and Solid-State Letters (2005), 8(11), A564-A569
CODEN: ESLEF6; ISSN: 1099-0062
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 12 Oct 2005
AB The high pressure (HP) polymorphs of quartz-FePO4 and olivine-LiFePO4 crystallize in structures related to the CrVO4 structural-type. First principles calcns. predict that HP-FePO4 is electrochem. active at 3.6 V vs. Li + /Li. Accordingly, electrochem. expts. followed by in situ synchrotron x-ray diffraction prove that 0.22 Li ions can be inserted in HP-FePO4 at 3 V The inserted lithium ions were located, by Fourier difference anal., at the initially empty tetrahedral sites of the structure, equivalent to those occupied by lithium in HP-LiFePO4. The lithium insertion reaction is reversible although it presents a very slow kinetics.
IT 889360-82-1, Iron lithium phosphate (FeLi0-0.4(PO4))
(lithium insertion in high-pressure polymorph of FePO4)
RN 889360-82-1 HCAPLUS
CN Iron lithium phosphate (FeLi0-0.4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 0.4	7439-93-2
Fe	1	7439-89-6

IT 889360-81-0P, Iron lithium phosphate (FeLi0.22(PO4))
(lithium insertion in high-pressure polymorph of FePO4)
RN 889360-81-0 HCAPLUS
CN Iron lithium phosphate (FeLi0.22(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.22	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75
ST lithium insertion high pressure polymorph iron phosphate ab initio; density state energy secondary lithium battery cathode iron phosphate

IT Ab initio methods
Battery cathodes
Density of states
Electrochemistry
Fermi level density of states
Polymorphism (crystal)
(lithium insertion in high-pressure polymorph of FePO4)
IT Secondary batteries
(lithium; lithium insertion in high-pressure polymorph of FePO4)
IT 10045-86-0, Iron phosphate (FePO4)
(cathode; lithium insertion in high-pressure polymorph of FePO4)
IT 889360-82-1, Iron lithium phosphate (FeLi0-0.4(PO4))
(lithium insertion in high-pressure polymorph of FePO4)
IT 889360-81-0P, Iron lithium phosphate (FeLi0.22(PO4))
(lithium insertion in high-pressure polymorph of FePO4)
OS.CITING REF COUNT: 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)
REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 20 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2005:395668 HCAPLUS Full-text
DOCUMENT NUMBER: 142:449376
TITLE: Cathode material for secondary battery, its manufacture, and the battery
INVENTOR(S): Hatta, Naoki; Inaba, Toshikazu; Uchiyama, Izumi
PATENT ASSIGNEE(S): Mitsui Engineering & Shipbuilding Co., Ltd., Japan; Research Institute of Innovative Technology for the Earth
SOURCE: PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005041327	A1	20050506	WO 2004-JP15836 <--	20041026
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2543851	A1	20050506	CA 2004-2543851 <--	20041026
EP 1689011	A1	20060809	EP 2004-792957 <--	20041026
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

CN 1883067	A	20061220	CN 2004-80031725 <--		20041026
CN 100573981	C	20091223			
JP 4656653	B2	20110323	JP 2005-515001 <--		20041026
KR 2006132576	A	20061221	KR 2006-7008069 <--		20060426
HK 1095431	A1	20100625	HK 2007-100905 <--		20070125
US 20080131777	A1	20080605	US 2008-577279 <--		20080205
PRIORITY APPLN. INFO.:			JP 2003-365790 <--	A	20031027
			WO 2004-JP15836 <--	W	20041026

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 09 May 2005

AB The material comprises a LinFePO4 (n =0-1) based cathode active mass and further contains ≥1 metal element, selected from group 4-6 and group 11-14, and a halo element having content ≥0.1 mol% (vs. P). The material is manufactured by mixing a LinFePO4 raw material with a metal halide, containing the metal element(s); and compositing the metal element with the active mass by firing the mixture The battery contains the above material.

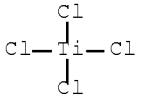
IT 7447-39-4, Copper chloride (CuCl2), uses
7550-45-0, Titanium chloride (TiCl4), uses
7646-78-8, Tin chloride (SnCl4), uses
7646-85-7, Zinc chloride (ZnCl2), uses
7718-98-1, Vanadium chloride (VCl3)
7772-99-8, Tin chloride (SnCl2), uses
10025-73-7, Chromium chloride (CrCl3)
10241-05-1, Molybdenum chloride (MoCl5)
22519-64-8, Indium trichloride tetrahydrate
(compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)

RN 7447-39-4 HCAPLUS

CN Copper chloride (CuCl2) (CA INDEX NAME)

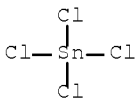
RN 7550-45-0 HCAPLUS

CN Titanium chloride (TiCl4) (T-4)- (CA INDEX NAME)



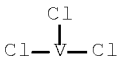
RN 7646-78-8 HCAPLUS

CN Stannane, tetrachloro- (CA INDEX NAME)



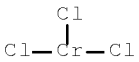
RN 7646-85-7 HCAPLUS
CN Zinc chloride (ZnCl2) (CA INDEX NAME)

RN 7718-98-1 HCAPLUS
CN Vanadium chloride (VCl3) (CA INDEX NAME)

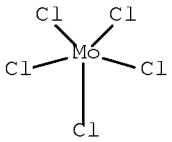


RN 7772-99-8 HCAPLUS
CN Tin chloride (SnCl2) (CA INDEX NAME)

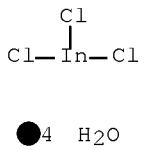
RN 10025-73-7 HCAPLUS
CN Chromium chloride (CrCl3) (CA INDEX NAME)



RN 10241-05-1 HCAPLUS
CN Molybdenum chloride (MoCl5) (CA INDEX NAME)



RN 22519-64-8 HCAPLUS
CN Indium chloride (InCl3), tetrahydrate (8CI, 9CI) (CA INDEX NAME)



IT 851190-38-0P, Iron lithium vanadium phosphate (Fe0.97Li1.01V0.01(PO4)) 851190-39-1P, Chromium iron lithium phosphate (Cr0.01FeLi1.03(PO4)) 851190-40-4P, Chromium iron lithium phosphate (Cr0.01Fe1.02Li0.99(PO4)) 851190-41-5P, Copper iron lithium phosphate (Cu0.01Fe0.96Li(PO4)) 851190-42-6P, Iron lithium zinc phosphate (Fe0.98Li1.04Zn0.01(PO4)) 851190-43-7P, Indium iron lithium phosphate (In0.01Fe0.98Li1.01(PO4)) 851190-44-8P, Iron lithium tin phosphate (Fe0.99Li0.97Sn0.01(PO4)) 851190-45-9P, Iron lithium tin phosphate (Fe1.01Li1.03Sn0.01(PO4)) 851190-46-0P, Iron lithium molybdenum phosphate (Fe1.01Li1.01Mo0.01(PO4)) 851190-47-1P, Iron lithium titanium phosphate (Fe0.97LiTi0.01(PO4)) 851190-48-2P, Iron lithium vanadium phosphate (Fe1.03Li1.02V0.01(PO4)) 851190-49-3P, Chromium iron lithium phosphate (Cr0.01Fe1.02Li1.03(PO4)) 851190-50-6P, Chromium iron lithium phosphate (Cr0.01Fe0.97Li1.01(PO4)) 851190-51-7P, Copper iron lithium phosphate (Cu0.01Fe0.97Li(PO4)) 851190-53-9P, Iron lithium zinc phosphate (Fe1.01Li1.04Zn0.01(PO4)) 851190-54-0P, Indium iron lithium phosphate (In0.01Fe0.99Li1.02(PO4)) 851190-55-1P, Iron lithium tin phosphate (Fe1.01Li1.05Sn0.01(PO4)) 851190-56-2P, Iron lithium tin phosphate (Fe1.01Li1.04Sn0.01(PO4)) 851190-57-3P, Iron lithium molybdenum phosphate (Fe1.08Li1.03Mo0.01(PO4)) 851190-58-4P, Iron lithium titanium phosphate (Fe1.04Li1.04Ti0.01(PO4))
(compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)

RN 851190-38-0 HCAPLUS
CN Iron lithium vanadium phosphate (Fe0.97Li1.01V0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
V	0.01	7440-62-2
Li	1.01	7439-93-2
Fe	0.97	7439-89-6

RN 851190-39-1 HCAPLUS
CN Chromium iron lithium phosphate (Cr0.01FeLi1.03(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	1	14265-44-2
Cr	0.01	7440-47-3
Li	1.03	7439-93-2
Fe	1	7439-89-6

RN 851190-40-4 HCAPLUS
CN Chromium iron lithium phosphate (Cr0.01Fe1.02Li0.99(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0.01	7440-47-3
Li	0.99	7439-93-2
Fe	1.02	7439-89-6

RN 851190-41-5 HCAPLUS
CN Copper iron lithium phosphate (Cu0.01Fe0.96Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.01	7440-50-8
Li	1	7439-93-2
Fe	0.96	7439-89-6

RN 851190-42-6 HCAPLUS
CN Iron lithium zinc phosphate (Fe0.98Li1.04Zn0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zn	0.01	7440-66-6
Li	1.04	7439-93-2
Fe	0.98	7439-89-6

RN 851190-43-7 HCAPLUS
CN Indium iron lithium phosphate (In0.01Fe0.98Li1.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
In	0.01	7440-74-6
Li	1.01	7439-93-2
Fe	0.98	7439-89-6

RN 851190-44-8 HCAPLUS
CN Iron lithium tin phosphate (Fe0.99Li0.97Sn0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Sn	0.01	7440-31-5
Li	0.97	7439-93-2

Fe	0.99	7439-89-6

RN 851190-45-9 HCAPLUS
CN Iron lithium tin phosphate (Fe1.01Li1.03Sn0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Sn	0.01	7440-31-5
Li	1.03	7439-93-2
Fe	1.01	7439-89-6

RN 851190-46-0 HCAPLUS
CN Iron lithium molybdenum phosphate (Fe1.01Li1.01Mo0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mo	0.01	7439-98-7
Li	1.01	7439-93-2
Fe	1.01	7439-89-6

RN 851190-47-1 HCAPLUS
CN Iron lithium titanium phosphate (Fe0.97LiTi0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.01	7440-32-6
Li	1	7439-93-2
Fe	0.97	7439-89-6

RN 851190-48-2 HCAPLUS
CN Iron lithium vanadium phosphate (Fe1.03Li1.02V0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
V	0.01	7440-62-2
Li	1.02	7439-93-2
Fe	1.03	7439-89-6

RN 851190-49-3 HCAPLUS
CN Chromium iron lithium phosphate (Cr0.01Fe1.02Li1.03(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0.01	7440-47-3
Li	1.03	7439-93-2
Fe	1.02	7439-89-6

RN 851190-50-6 HCAPLUS
CN Chromium iron lithium phosphate (Cr0.01Fe0.97Li1.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0.01	7440-47-3
Li	1.01	7439-93-2
Fe	0.97	7439-89-6

RN 851190-51-7 HCAPLUS
CN Copper iron lithium phosphate (Cu0.01Fe0.97Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0.01	7440-50-8
Li	1	7439-93-2
Fe	0.97	7439-89-6

RN 851190-53-9 HCAPLUS
CN Iron lithium zinc phosphate (Fe1.01Li1.04Zn0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zn	0.01	7440-66-6
Li	1.04	7439-93-2
Fe	1.01	7439-89-6

RN 851190-54-0 HCAPLUS
CN Indium iron lithium phosphate (In0.01Fe0.99Li1.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
In	0.01	7440-74-6
Li	1.02	7439-93-2
Fe	0.99	7439-89-6

RN 851190-55-1 HCAPLUS
CN Iron lithium tin phosphate (Fe1.01Li1.05Sn0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Sn	0.01	7440-31-5
Li	1.05	7439-93-2
Fe	1.01	7439-89-6

RN 851190-56-2 HCAPLUS
CN Iron lithium tin phosphate (Fe1.01Li1.04Sn0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Sn	0.01	7440-31-5
Li	1.04	7439-93-2
Fe	1.01	7439-89-6

RN 851190-57-3 HCAPLUS
CN Iron lithium molybdenum phosphate (Fe1.08Li1.03Mo0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mo	0.01	7439-98-7
Li	1.03	7439-93-2
Fe	1.08	7439-89-6

RN 851190-58-4 HCAPLUS
CN Iron lithium titanium phosphate (Fe1.04Li1.04Ti0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.01	7440-32-6
Li	1.04	7439-93-2
Fe	1.04	7439-89-6

IPCI H01M0004-48 [ICM,7]; H01M0004-58 [ICS,7]; H01M0004-02 [ICS,7]; C01B0025-45 [ICS,7]
IPCR C01B0025-45 [I,A]; H01M0004-131 [N,A]; H01M0004-1315 [N,A]; H01M0004-136 [N,A]; H01M0004-13915 [N,A]; H01M0004-58 [I,A]; H01M0010-052 [I,A]; H01M0010-36 [I,A]; H01M0010-44 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery cathodes
(compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)
IT Secondary batteries
(lithium; compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)
IT 7447-39-4, Copper chloride (CuCl2), uses
7550-45-0, Titanium chloride (TiCl4), uses
7646-78-8, Tin chloride (SnCl4), uses
7646-85-7, Zinc chloride (ZnCl2), uses
7718-98-1, Vanadium chloride (VCl3)
7772-99-8, Tin chloride (SnCl2), uses
10025-73-7, Chromium chloride (CrCl3)
10241-05-1, Molybdenum chloride (MoCl5)
22519-64-8, Indium trichloride tetrahydrate
(compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)
IT 851190-38-0P, Iron lithium vanadium phosphate (Fe0.97Li1.01V0.01(PO4)) 851190-39-1P, Chromium iron lithium phosphate (Cr0.01FeLi1.03(PO4)) 851190-40-4P, Chromium iron lithium phosphate (Cr0.01Fe1.02Li0.99(PO4))

851190-41-5P, Copper iron lithium phosphate (Cu0.01Fe0.96Li(PO4)) 851190-42-6P, Iron lithium zinc phosphate (Fe0.98Li1.04Zn0.01(PO4)) 851190-43-7P, Indium iron lithium phosphate (In0.01Fe0.98Li1.01(PO4)) 851190-44-8P, Iron lithium tin phosphate (Fe0.99Li0.97Sn0.01(PO4)) 851190-45-9P, Iron lithium tin phosphate (Fe1.01Li1.03Sn0.01(PO4)) 851190-46-0P, Iron lithium molybdenum phosphate (Fe1.01Li1.01Mo0.01(PO4)) 851190-47-1P, Iron lithium titanium phosphate (Fe0.97LiTi0.01(PO4)) 851190-48-2P, Iron lithium vanadium phosphate (Fe1.03Li1.02V0.01(PO4)) 851190-49-3P, Chromium iron lithium phosphate (Cr0.01Fe1.02Li1.03(PO4)) 851190-50-6P, Chromium iron lithium phosphate (Cr0.01Fe0.97Li1.01(PO4)) 851190-51-7P, Copper iron lithium phosphate (Cu0.01Fe0.97Li(PO4)) 851190-53-9P, Iron lithium zinc phosphate (Fe1.01Li1.04Zn0.01(PO4)) 851190-54-0P, Indium iron lithium phosphate (In0.01Fe0.99Li1.02(PO4)) 851190-55-1P, Iron lithium tin phosphate (Fe1.01Li1.05Sn0.01(PO4)) 851190-56-2P, Iron lithium tin phosphate (Fe1.01Li1.04Sn0.01(PO4)) 851190-57-3P , Iron lithium molybdenum phosphate (Fe1.08Li1.03Mo0.01(PO4)) 851190-58-4P, Iron lithium titanium phosphate (Fe1.04Li1.04Ti0.01(PO4))
(compns. and manufacture of cathode materials containing lithium iron composite phosphates for secondary lithium batteries)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 21 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:759266 HCAPLUS Full-text
DOCUMENT NUMBER: 141:280353
TITLE: Production of lithium compound phosphate cathodes for secondary lithium ion batteries
INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Toge, Yoshiyuki; Saito, Mitsumasa
PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259471	A	20040916	JP 2003-45885 <--	20030224
JP 4252331	B2	20090408		
PRIORITY APPLN. INFO.:			JP 2003-45885 <--	20030224

ED Entered STN: 17 Sep 2004
AB The lithium compound phosphates, having olivine-type structure, are produced by a process including steps of (1) spray thermal decomposition of solns. or suspensions containing Li, metals excluding Li, and P, and (2) firing the resultant decomposition products. The phosphates may be expressed by LixAyPO4 (A = Cr, Mn, Fe, Co, Ni, Cu; 0 < x < 2; 0 < y ≤ 1). In the production, elec.

conductive substances and/or their precursors may be added to the solns./suspensions. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.

IT 757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

RN 757954-82-8 HCAPLUS

CN Iron lithium phosphate (Fe0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IPCI H01M0004-58 [I,A]; H01M0004-62 [I,A]; C01B0025-45 [N,A]

IPCR C01B0025-45 [I,A]; H01M0004-02 [I,A]; H01M0004-58 [I,A]; H01M0004-62 [I,A]; H01M0010-40 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery cathode lithium transition metal phosphate

IT Carbonaceous materials (technological products)
(elec. conductive additives in cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT Carbon black, uses
(elec. conductive additives in cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT Secondary batteries
(lithium; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT Battery cathodes
(preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT Thermal decomposition
(spray; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4)) 757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT 1310-65-2, Lithium hydroxide 7447-41-8, Lithium chloride, processes 7664-38-2, Phosphoric acid, processes 7758-94-3, Iron chloride (fecl2) 7790-69-4, Lithium nitrate 10141-05-6
(in preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

IT 57-50-1, Sucrose, processes

(precursors for elec. conductive additives in cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L76 ANSWER 22 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:759265 HCAPLUS Full-text
DOCUMENT NUMBER: 141:280352
TITLE: Lithium transition metal phosphate cathodes for lithium ion batteries
INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Yamada, Satoshi; Toge, Yoshiyuki; Saito, Mitsumasa
PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259470	A	20040916	JP 2003-45884 <--	20030224
JP 4190912	B2	20081203		
PRIORITY APPLN. INFO.:			JP 2003-45884 <--	20030224

ED Entered STN: 17 Sep 2004
AB The cathodes are expressed by olivine-type LixAyPO4 (A = Cr, Mn, Fe, Co, Ni, Cu; 0 < x < 2; 0 < y ≤ 1) with crystallite diameter of ≤35 nm. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.
IT 757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)
RN 757954-82-8 HCAPLUS
CN Iron lithium phosphate (Fe0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IPCI H01M0004-58 [I,A]; C01B0025-45 [I,A]
IPCR C01B0025-45 [I,A]; H01M0004-02 [I,A]; H01M0004-58 [I,A]; H01M0010-40 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cathode lithium transition metal phosphate
IT Battery cathodes
(lithium transition metal phosphate cathodes for lithium ion batteries)
IT Secondary batteries
(lithium; lithium transition metal phosphate cathodes for lithium ion batteries)
IT 757954-84-0, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))

757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4)) 757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)
IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
(cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)

L76 ANSWER 23 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:472088 HCAPLUS Full-text
DOCUMENT NUMBER: 141:26116
TITLE: Boron-doped lithium phosphate-type insertion compounds as electrodes for batteries and electrochromic devices
INVENTOR(S): Franger, Sylvain; Le Cras, Frederic; Bourbon, Carole
PATENT ASSIGNEE(S): Commissariat A L'energie Atomique, Fr.
SOURCE: Fr. Demande, 36 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2848205	A1	20040611	FR 2002-15343 <--	20021205
FR 2848205	B1	20060324		
WO 2004052787	A1	20040624	WO 2003-FR50148 <--	20031202
W: CN, JP, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
EP 1567452	A1	20050831	EP 2003-799704 <--	20031202
EP 1567452	B1	20060510		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
CN 1720197	A	20060111	CN 2003-80104737 <--	20031202
CN 100371254	C	20080227		
AT 325778	T	20060615	AT 2003-799704 <--	20031202
ES 2264036	T3	20061216	ES 2003-799704 <--	20031202
JP 2007502249	T	20070208	JP 2006-527177 <--	20031202
US 20060127295	A1	20060615	US 2005-536178 <--	20051027
US 7529014	B2	20090505		

PRIORITY APPLN. INFO.: FR 2002-15343 A 20021205 <--
WO 2003-FR50148 W 20031202 <--

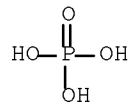
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 11 Jun 2004
AB Boron-doped lithium insertion compds. suitable for use as battery electrodes have the general formula LiαMβM1vM2wM3x M4yM5zBγ . (XO4-εZε), in which: (1) M

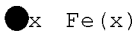
is a divalent metal ion, such as V2+, Mn2+, Fe2+, Co2+, and Ni2+, (2) M1 is a monovalent metal ion, such as Na+ and K+, (3) M2 is a divalent metal ion, such as Mg2+, Zn2+, Cu2+, Cu2+, Ti2+, and Ca2+, (4) M3 is a trivalent metal ion selected from Al3+, Ti3+, Cr3+, Fe3+, Mn3+, Ga3+, and V3+, (5) M4 is a tetravalent metal ion selected from Ti4+, Ge4+, Sn4+, V4+, and Zr4+, (6) M5 is a pentavalent metal ion selected from V5+, Nb5+, and Ta5+, (7) X is a oxygen-coordinated metal (oxidation state 2-6) selected from Al3+, V5+, Si4+, P5+, S6+, and Ge4+, and (8) Z is a halogen. The coeffs. are all pos. and listed as follows: (1) α = 0-2, (2) β = 1-2, (3) γ = 0-3, (4) ε = 0-2, (5) $\alpha + 2\beta + 3\gamma + v + 2w + 4y + 5z + m = 8 - \varepsilon$, and (6) γ/S = 0-0.1 ($S = \beta + v + w + x + y + z$). Preferred substances are $LiFe_{0.95}B_{0.033}PO_4$ and $Li_3Fe_{1.93}B_{0.07}(PO_4)_3$, and compds. that are isotypes with Nasicon ($Na_xM_2X_3O_{12}$, in which X = P, Mo, Si, Ge, and S; x = 0-5, preferably 3) and olivine.

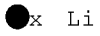
IT 411234-54-3, Iron lithium phosphate
(boron-doped, electrode; boron-doped lithium phosphate-type insertion compds. as electrodes for batteries and electrochromic devices)

RN 411234-54-3 HCAPLUS

CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)







IT 700375-31-1, Iron lithium boride phosphate ($Fe_{0.95}LiB_{0.03}(PO_4)$) 700375-32-2, Iron lithium boride phosphate ($Fe_{1.93}LiB_{0.07}(PO_4)_3$)
(electrode; boron-doped lithium phosphate-type insertion compds. as electrodes for batteries and electrochromic devices)

RN 700375-31-1 HCAPLUS

CN Iron lithium boride phosphate ($Fe_{0.95}LiB_{0.03}(PO_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
B	0.03	7440-42-8
Li	1	7439-93-2
Fe	0.95	7439-89-6

RN 700375-32-2 HCAPLUS

CN Iron lithium boride phosphate ($Fe_{1.93}LiB_{0.07}(PO_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
B	0.07	7440-42-8

Li	1	7439-93-2
Fe	1.93	7439-89-6

IPCI C01B0025-00 [I,C]; C01D0015-00 [I,C]; H01M0004-48 [I,C]; H01M0004-50 [I,C]; H01M0004-52 [I,C]; H01M0010-34 [I,C]; C01D0015-00 [I,A]; C01B0025-26 [I,A]; C01B0025-30 [I,A]; H01M0004-48 [I,A]; H01M0004-50 [I,A]; H01M0004-52 [I,A]; H01M0010-34 [I,A]
IPCR C01B0025-26 [I,A]; H01M0004-131 [I,A]; H01M0004-1315 [I,A]; H01M0004-1391 [I,A]; H01M0004-13915 [I,A]; H01M0004-36 [N,A]; H01M0004-48 [I,A]; H01M0004-485 [I,A]; H01M0004-58 [I,A]; H01M0010-0525 [N,A]; H01M0010-36 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery cathodes
Battery electrodes
(active materials for; boron-doped lithium phosphate-type insertion compds. as electrodes for batteries and electrochromic devices)
IT 13826-59-0, Lithium manganese phosphate 411234-54-3, Iron lithium phosphate
(boron-doped, electrode; boron-doped lithium phosphate-type insertion compds. as electrodes for batteries and electrochromic devices)
IT 700375-31-1, Iron lithium boride phosphate (Fe0.95LiB0.03(PO4)) 700375-32-2, Iron lithium boride phosphate (Fe1.93LiB0.07(PO4)3) 700375-33-3, Lithium manganese boride phosphate (LiMn0.95B0.03(PO4))
(electrode; boron-doped lithium phosphate-type insertion compds. as electrodes for batteries and electrochromic devices)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 24 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2004:164679 HCAPLUS Full-text
DOCUMENT NUMBER: 140:342048
TITLE: Nano-network electronic conduction in iron and nickel olivine phosphates
AUTHOR(S): Herle, P. Subramanya; Ellis, B.; Coombs, N.; Nazar, L. F.
CORPORATE SOURCE: Department of Chemistry, University of Waterloo, Waterloo, ON, N2L 3G1, Can.
SOURCE: Nature Materials (2004), 3(3), 147-152
CODEN: NMAACR; ISSN: 1476-1122
PUBLISHER: Nature Publishing Group
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 01 Mar 2004
AB Efficient electron and ion transport is a critical issue in the new group of materials based on Li metal phosphates that are important as cathodes for Li-ion batteries. There is interest in olivine-type LiFePO4, but although the 1-dimensional Li-ion mobility in this framework is high, the electronically-insulating phosphate groups that benefit the voltage also isolate the redox centers within the lattice. The pristine compound is a very poor conductor (σ .apprx. 10-9 S/cm), thus limiting its electrochem. response. Inclusion of conductive phases however increases its capacity to near-theor. values. It was also attempted to alter the inherent conductivity of the lattice by doping it with a super-valent ion. Compns. were reported to be black p-type semiconductors with conductivities of .apprx.10-2 S/cm arising from minority

Fe3+ hole carriers. The results for doped (and undoped) LiMPO4 (M = Fe, Ni) show that a percolating nano-network of metal-rich phosphides are responsible for the enhanced conductivity The demonstration of non-carbonaceous-network grain-boundary conduction is a 1st for these materials and it holds promise for other insulating phosphates.

IT 681153-59-3P, Iron lithium phosphate (FeLi0.94(PO4))
681153-62-8P, Iron lithium phosphate (FeLi0.97(PO4))
681153-63-9P, Iron lithium phosphate (FeLi0.91(PO4))
(nano-network electronic conduction in iron and nickel olivine phosphate cathode material for lithium batteries)

RN 681153-59-3 HCAPLUS
CN Iron lithium phosphate (FeLi0.94(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.94	7439-93-2
Fe	1	7439-89-6

RN 681153-62-8 HCAPLUS
CN Iron lithium phosphate (FeLi0.97(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.97	7439-93-2
Fe	1	7439-89-6

RN 681153-63-9 HCAPLUS
CN Iron lithium phosphate (FeLi0.91(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.91	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST iron nickel olivine phosphate cathode electronic conduction lithium battery

IT Secondary batteries
(lithium; nano-network electronic conduction in iron and nickel olivine phosphate cathode material for lithium batteries)

IT Battery cathodes
Electric conductivity
(nano-network electronic conduction in iron and nickel olivine phosphate cathode material for lithium batteries)

IT 15365-14-7P, Iron lithium phosphate (FeLiPO4) 681153-59-3P, Iron lithium phosphate (FeLi0.94(PO4)) 681153-60-6P, Iron lithium zirconium phosphate (FeLi0.9Zr0.01(PO4)) 681153-61-7P, Iron lithium zirconium phosphate (FeLi0.93Zr0.01(PO4)) 681153-62-8P, Iron lithium phosphate (FeLi0.97(PO4)) 681153-63-9P, Iron

lithium phosphate (FeLi0.91(PO4)) 681153-64-0P, Lithium nickel phosphate (Li0.97Ni(PO4)) 681153-65-1P, Lithium nickel phosphate (Li0.94Ni(PO4))
(nano-network electronic conduction in iron and nickel olivine phosphate cathode material for lithium batteries)

OS.CITING REF COUNT: 277 THERE ARE 277 CAPLUS RECORDS THAT CITE THIS RECORD (281 CITINGS)
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 25 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:532921 HCAPLUS Full-text
DOCUMENT NUMBER: 139:87848
TITLE: Transition metal polyanion oxides as lithium ion intercalating structures for battery electrode
INVENTOR(S): Chiang, Yet-Ming; Chung, Sung-Yoon; Bloking, Jason T.; Andersson, Anna M.
PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA
SOURCE: PCT Int. Appl., 122 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003056646	A1	20030710	WO 2002-US41471 <--	20021223
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2471455	A1	20030710	CA 2002-2471455 <--	20021223
AU 2002364020	A1	20030715	AU 2002-364020 <--	20021223
US 20040005265	A1	20040108	US 2002-329046 <--	20021223
US 7338734	B2	20080304		
EP 1456895	A1	20040915	EP 2002-798597 <--	20021223
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CN 1615554	A	20050511	CN 2002-827276 <--	20021223
CN 100414746	C	20080827		
JP 2005514304	T	20050519	JP 2003-557056 <--	20021223
KR 2010031782	A	20100324	KR 2010-7004725 <--	20021223

EP 2278643	A1	20110126	EP 2010-185031 <--	20021223
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, SI, SK, TR				
IN 2004KN00891	A	20060519	IN 2004-KN891 <--	20040625
IN 239780	A1	20100402		
AU 2007202605	A1	20070628	AU 2007-202605 <--	20070607
AU 2007202605	B2	20110421		
US 20090311597	A1	20091217	US 2007-901463 <--	20070917
IN 2008KN04155	A	20090306	IN 2008-KN4155 <--	20081014
IN 2008KN04486	A	20090313	IN 2008-KN4486 <--	20081106

PRIORITY APPLN. INFO.:	US 2001-343060P <--	P	20011221
	US 2002-388721P <--	P	20020614
	US 2002-412656P <--	P	20020920
	AU 2002-364020 <--	A3	20021223
	EP 2002-798597 <--	A3	20021223
	KR 2004-7009809 <--	A3	20021223
	US 2002-329046 <--	A1	20021223
	WO 2002-US41471 <--	W	20021223
	IN 2004-KN891 <--	A3	20040625

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

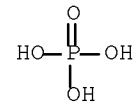
ED Entered STN: 11 Jul 2003

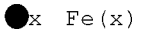
AB The invention concerns a compound comprising a composition A.(M'1-aM'a)y(XD4)z, Ax,(M'1-aM'a)y(DXD4)z, or Ax,(M'1-aM"a)y(X2D7)z, and have values such that x, plus y(1-a) times a formal valence or valences of M', plus ya times a formal valence or valence of M', is equal to z times a formal valence of the XD4, X2D7, or DXD4 group; or a compound comprising a composition (A1-aM''a)xM'y(XD4)z, (A1-aM''a)xM'y(DXD4)z, (A1-aM'a)xM'y(X2D7)z and have values such that (1-a)x plus the quantity ax times the formal valence or valences of M' plus y times the formal valence or valences of M' is equal to z times the formal valence of the XD4, X2D7 or DXD4 group. In the compound, A is at least one of an alkali metal and hydrogen, M' is a first-row transition metal, X is at least one of phosphorus, sulfur, arsenic, molybdenum, and tungsten, M' any of a Group IIA, IIIA, IVA, VA, VIA, VIIA, VIIIA, IB, IIB, IIIB, IVB, VB, and VIB metal, D is at least one of oxygen, nitrogen, carbon, or a halogen, 0.0001 < a ≤ 0.1, and x, y, and z are greater than zero. The compound can have a conductivity at 27° of at least about 10-8 S/cm. The compound can be a doped lithium phosphate that can intercalate lithium or hydrogen. The compound can be used in an electrochem. device including electrodes and storage batteries and can have a gravimetric capacity of at least about 80 mA-h/g while being charged/discharged at greater than about C rate of the compound

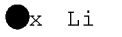
IT 411234-54-3P 478819-82-8P, Iron lithium titanium phosphate FeLi0.99Ti0.01(PO4) 478819-83-9P, Iron lithium niobium phosphate FeLi0.99Nb0.01(PO4) 478819-84-0P, Iron lithium magnesium phosphate FeLi0.99Mg0.01(PO4) 478819-85-1P , Aluminum iron lithium phosphate (Al0.01FeLi0.99(PO4))

478819-87-3P, Iron lithium titanium phosphate Fe0.99LiTi0.01(PO4) 478819-89-5P, Iron lithium zirconium phosphate (Fe0.99LiZr0.01(PO4)) 496816-58-1P, Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4)) 531493-25-1P, Iron lithium titanium phosphate Fe0.98LiTi0.02(PO4) 554453-44-0P, Iron lithium zirconium phosphate (Fe0.95LiZr0.05(PO4)) 554453-45-1P, Iron lithium niobium phosphate (FeLi0.98Nb0.02(PO4)) 554453-46-2P, Iron lithium niobium phosphate (FeLi0.96Nb0.04(PO4)) 554453-47-3P, Iron lithium phosphate (Fe1.01Li0.99(PO4)) 554453-48-4P, Iron lithium phosphate (Fe0.99Li1.01(PO4))
(transition metal polyanion oxides as lithium ion intercalating structures for battery electrode)

RN 411234-54-3 HCAPLUS
CN Phosphoric acid, iron lithium salt (9CI) (CA INDEX NAME)







RN 478819-82-8 HCAPLUS
CN Iron lithium titanium phosphate (FeLi0.99Ti0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.01	7440-32-6
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 478819-83-9 HCAPLUS
CN Iron lithium niobium phosphate (FeLi0.99Nb0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.01	7440-03-1
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 478819-84-0 HCAPLUS
CN Iron lithium magnesium phosphate (FeLi0.99Mg0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O4P	1	14265-44-2
Mg	0.01	7439-95-4
Li	0.99	7439-93-2
Fe	1	7439-89-6

RN 478819-85-1 HCAPLUS
CN Aluminum iron lithium phosphate (Al0.01FeLi0.99(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.99	7439-93-2
Fe	1	7439-89-6
Al	0.01	7429-90-5

RN 478819-87-3 HCAPLUS
CN Iron lithium titanium phosphate (Fe0.99LiTi0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.01	7440-32-6
Li	1	7439-93-2
Fe	0.99	7439-89-6

RN 478819-89-5 HCAPLUS
CN Iron lithium zirconium phosphate (Fe0.99LiZr0.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zr	0.01	7440-67-7
Li	1	7439-93-2
Fe	0.99	7439-89-6

RN 496816-58-1 HCAPLUS
CN Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zr	0.02	7440-67-7
Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 531493-25-1 HCAPLUS
CN Iron lithium titanium phosphate (Fe0.98LiTi0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0.02	7440-32-6

Li	1	7439-93-2
Fe	0.98	7439-89-6

RN 554453-44-0 HCAPLUS
CN Iron lithium zirconium phosphate (Fe0.95LiZr0.05(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zr	0.05	7440-67-7
Li	1	7439-93-2
Fe	0.95	7439-89-6

RN 554453-45-1 HCAPLUS
CN Iron lithium niobium phosphate (FeLi0.98Nb0.02(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.02	7440-03-1
Li	0.98	7439-93-2
Fe	1	7439-89-6

RN 554453-46-2 HCAPLUS
CN Iron lithium niobium phosphate (FeLi0.96Nb0.04(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0.04	7440-03-1
Li	0.96	7439-93-2
Fe	1	7439-89-6

RN 554453-47-3 HCAPLUS
CN Iron lithium phosphate (Fe1.01Li0.99(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.99	7439-93-2
Fe	1.01	7439-89-6

RN 554453-48-4 HCAPLUS
CN Iron lithium phosphate (Fe0.99Li1.01(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1.01	7439-93-2
Fe	0.99	7439-89-6

IPCI H01M0004-58 [ICM,7]
IPCR B01D0071-02 [I,A]; B01J0020-02 [I,A]; C01B0003-00 [I,A]; C01B0025-45 [I,A]; H01M0004-58 [I,A]; H01M0004-70 [N,A]; H01M0004-74 [N,A];

H01M0004-86 [I,A]; H01M0006-16 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 72
IT 15365-14-7P, Iron lithium phosphate felipo4 223505-09-7P, Iron lithium titanium phosphate 411234-54-3P 478819-82-8P, Iron lithium titanium phosphate FeLi0.99Ti0.01(PO4) 478819-83-9P, Iron lithium niobium phosphate FeLi0.99Nb0.01(PO4) 478819-84-0P, Iron lithium magnesium phosphate FeLi0.99Mg0.01(PO4) 478819-85-1P, Aluminum iron lithium phosphate (Al0.01FeLi0.99(PO4)) 478819-87-3P, Iron lithium titanium phosphate Fe0.99LiTi0.01(PO4) 478819-89-5P, Iron lithium zirconium phosphate (Fe0.99LiZr0.01(PO4)) 496816-58-1P, Iron lithium zirconium phosphate (Fe0.98LiZr0.02(PO4)) 531493-25-1P, Iron lithium titanium phosphate Fe0.98LiTi0.02(PO4) 554453-36-0P 554453-37-1P 554453-38-2P 554453-39-3P 554453-40-6P 554453-41-7P 554453-42-8P 554453-44-0P, Iron lithium zirconium phosphate (Fe0.95LiZr0.05(PO4)) 554453-45-1P, Iron lithium niobium phosphate (FeLi0.98Nb0.02(PO4)) 554453-46-2P, Iron lithium niobium phosphate (FeLi0.96Nb0.04(PO4)) 554453-47-3P, Iron lithium phosphate (Fe1.01Li0.99(PO4)) 554453-48-4P, Iron lithium phosphate (Fe0.99Li1.01(PO4))
(transition metal polyanion oxides as lithium ion intercalating structures for battery electrode)
OS.CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS RECORD (15 CITINGS)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 26 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2003:437518 HCAPLUS Full-text
DOCUMENT NUMBER: 139:278965
TITLE: Experimental and computational study of the structure and electrochemical properties of monoclinic LixM2(PO4)3 compounds
AUTHOR(S): Morgan, D.; Ceder, G.; Saidi, M. Y.; Barker, J.; Swoyer, J.; Huang, H.; Adamson, G.
CORPORATE SOURCE: Computational Modeling Consultants, Wellesley, MA, USA
SOURCE: Journal of Power Sources (2003), 119-121, 755-759
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 09 Jun 2003
AB This paper presents a combined computational and exptl. study of the structural and electrochem. properties of monoclinic LixM2(PO4)3 (with a focus on M=V). The voltage curve for x=0-3 Li is measured exptl. and calculated Features of the voltage curve are understood as emerging from site energetics, Li ordering, and redox couples. These features are found to be largely independent of alloying and a simple additive model is proposed to analyze the voltage curve for different cation substitutions. The model is shown to be very useful for understanding exptl. results for a number of substituted compds.
IT 605661-91-4, Iron lithium phosphate (Fe2Li0.25(PO4)3)
(exptl. and computational study of crystal structure site occupancy

and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
RN 605661-91-4 HCAPLUS
CN Iron lithium phosphate (Fe2Li0.25(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	0.25	7439-93-2
Fe	2	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT Ab initio methods
Battery cathodes
Insertion reaction
Intercalation
Open circuit potential
(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
IT Secondary batteries
(lithium; exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
21324-40-3, Lithium hexafluorophosphate
(electrolyte; exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
IT 204653-31-6, Lithium titanium vanadium phosphate Li3TiV(PO4)3
204653-32-7, Aluminum lithium vanadium phosphate AlLi3V(PO4)3
605661-90-3, Lithium vanadium phosphate (Li0.25V2(PO4)3)
605661-91-4, Iron lithium phosphate (Fe2Li0.25(PO4)3)
605661-92-5 605661-93-6
(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
IT 84159-18-2P, Lithium vanadium phosphate Li3V2(PO4)3
(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic LixM2(PO4)3 compds. as battery cathodes)
OS.CITING REF COUNT: 15 THERE ARE 15 CAPLUS RECORDS THAT CITE THIS RECORD (15 CITINGS)
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 27 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:927780 HCAPLUS Full-text
DOCUMENT NUMBER: 138:26878
TITLE: Anode and cathode materials for sodium ion batteries
INVENTOR(S): Barker, Jeremy; Yazid, Saidi M.; Swoyer, Jeffrey L.
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: PCT Int. Appl., 77 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 5
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002097907	A2	20021205	WO 2002-US10775 <--	20020404
WO 2002097907	A3	20040415		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2442257	A1	20021205	CA 2002-2442257 <--	20020404
AU 2002320020	A1	20021209	AU 2002-320020 <--	20020404
EP 1430555	A2	20040623	EP 2002-749518 <--	20020404
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004533706	T	20041104	JP 2003-500990 <--	20020404
JP 4643903	B2	20110302		
CN 1723578	A	20060118	CN 2002-811313 <--	20020404
CN 100372158	C	20080227		
KR 814540	B1	20080317	KR 2003-7013080 <--	20031006
JP 2009266821	A	20091112	JP 2009-125190 <--	20090525

PRIORITY APPLN. INFO.:	US 2001-283560P	P	20010406
	JP 2003-500990	A3	20020404
	WO 2002-US10775	W	20020404

ED Entered STN: 06 Dec 2002

AB Sodium ion batteries are based on sodium based active materials selected among compds. of the general formula: AaMb(XY4)cZ-d, wherein a comprises sodium, M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidation to a higher valence state, Z is OH or halogen, and XY4 represents phosphate or a similar group. The anode of the battery includes a carbon material that is capable of inserting sodium ions. The carbon anode cycles reversibly at a specific capacity greater than 100 mAh/g.

IT 477779-82-1, Iron lithium sodium fluoride phosphate (Fe(Li,Na)F(PO4))
(anode and cathode materials for sodium ion batteries)

RN 477779-82-1 HCAPLUS

CN Iron lithium sodium fluoride phosphate (Fe(Li,Na)F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Na	0 - 1	7440-23-5
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,7]; H01M0010-40 [ICS,7]
IPCR C01B0025-455 [I,A]; H01M0004-02 [N,A]; H01M0004-40 [I,A]; H01M0004-58 [I,A]; H01M0004-583 [N,A]; H01M0006-16 [N,A]; H01M0010-054 [I,A]; H01M0010-0564 [I,A]; H01M0010-0565 [I,A]; H01M0010-36 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery anodes
Battery cathodes
(anode and cathode materials for sodium ion batteries)
IT Transition metal compounds
(phosphates, sodium-containing; anode and cathode materials for sodium ion batteries)
IT Secondary batteries
(sodium; anode and cathode materials for sodium ion batteries)
IT 7440-44-0, Carbon, uses 7664-38-2D, Phosphoric acid, transition metal compds., Na-containing 12028-91-0, Copper sodium phosphate 15670-69-6 16986-74-6, Iron Sodium phosphate Fe2Na3(PO4)3 69104-83-2, Sodium titanium phosphate Na3Ti2(PO4)3 69104-84-3 95983-75-8, Sodium titanium phosphate 477779-61-6, Sodium vanadium phosphate 477779-62-7, Manganese sodium phosphate 477779-64-9, Cobalt sodium phosphate 477779-65-0, Nickel sodium phosphate 477779-67-2, Cobalt sodium fluoride phosphate (CoNa0.8-1.5F0.8-1.5(PO4)) 477779-68-3, Iron sodium fluoride phosphate (FeNa0.8-1.5F0.8-1.5(PO4)) 477779-69-4, Sodium vanadium fluoride phosphate (Na0.8-1.5VF0.8-1.5(PO4)) 477779-70-7, Manganese sodium fluoride phosphate (MnNa0.8-1.5F0.8-1.5(PO4)) 477779-71-8, Copper sodium fluoride phosphate (CuNa0.8-1.5F0.8-1.5(PO4)) 477779-72-9, Nickel sodium fluoride phosphate (NiNa0.8-1.5F0.8-1.5(PO4)) 477779-73-0, Sodium titanium fluoride phosphate (Na0.8-1.5TiF0.8-1.5(PO4)) 477779-74-1 477779-76-3 477779-78-5 477779-79-6 477779-80-9, Iron magnesium sodium phosphate ((Fe,Mg)Na(PO4)) 477779-81-0 477779-82-1, Iron lithium sodium fluoride phosphate (Fe(Li,Na)F(PO4)) 477779-83-2, Cobalt lithium sodium fluoride phosphate (Co(Li,Na)F(PO4)) 477779-84-3, Copper lithium sodium fluoride phosphate (Cu(Li,Na)F(PO4)) 477779-85-4, Lithium nickel sodium fluoride phosphate ((Li,Na)NiF(PO4)) 477779-86-5
(anode and cathode materials for sodium ion batteries)
IT 7440-23-5, Sodium, uses
(anode and cathode materials for sodium ion batteries)
IT 53602-70-3P, Iron sodium phosphate FeNaPO4 83201-61-0P, Sodium vanadyl phosphate NaVOPO4 477779-87-6P, Sodium vanadium fluoride phosphate (NaVF(PO4)) 477779-88-7P 477779-89-8P 477779-90-1P, Iron sodium fluoride phosphate (FeNa2F(PO4))
(anode and cathode materials for sodium ion batteries)

IT 1314-62-1P, Vanadia, preparation 12359-27-2P, Vanadyl phosphate (anode and cathode materials for sodium ion batteries)

OS.CITING REF COUNT: 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (29 CITINGS)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 28 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:849980 HCAPLUS Full-text

DOCUMENT NUMBER: 137:340029

TITLE: Method of forming phosphate powder particle compositions with complex anions for electrodes and batteries

INVENTOR(S): Chaloner-Gill, Benjamin; Pinoli, Allison A.; Horne, Craig R.; Mosso, Ronald J.; Bi, Xiangxin

PATENT ASSIGNEE(S): Neo Photonics Corporation, USA

SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 32

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002089233	A2	20021107	WO 2002-US12069 <--	20020418
WO 2002089233	A3	20021219		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 20020192137	A1	20021219	US 2001-845985 <--	20010430
AU 2002338575	A1	20021111	AU 2002-338575 <--	20020418
PRIORITY APPLN. INFO.:			US 2001-845985 A <--	20010430
			WO 2002-US12069 W <--	20020418

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 08 Nov 2002

AB Nanoscale and submicron particles have been produced with polyat. anions. The particles can be crystalline or amorphous. The particles are synthesized in a flowing reactor, preferably with an intense light beam driving the reaction. In preferred embodiments, the particles are highly uniform. Batteries can be formed from submicron and nanoscale lithium metal phosphates. Coatings also can be formed from the particles.

IT 474317-40-3P, Iron lithium phosphate (FeLi0.1-1(PO4)) 474317-41-4P, Iron lithium manganese phosphate (Fe0.2-1LiMn0-0.8(PO4)) 474317-42-5P, Iron lithium manganese phosphate (Fe0.2-0.6LiMn0.4-0.8(PO4))

(method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)

RN 474317-40-3 HCAPLUS
CN Iron lithium phosphate (FeLi0.1-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.1 - 1	7439-93-2
Fe	1	7439-89-6

RN 474317-41-4 HCAPLUS
CN Iron lithium manganese phosphate (Fe0.2-1LiMn0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0 - 0.8	7439-96-5
Li	1	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 474317-42-5 HCAPLUS
CN Iron lithium manganese phosphate (Fe0.2-0.6LiMn0.4-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0.4 - 0.8	7439-96-5
Li	1	7439-93-2
Fe	0.2 - 0.6	7439-89-6

IPCI H01M0004-40 [ICM,7]; H01M0004-50 [ICS,7]; H01M0004-52 [ICS,7]; A61K0009-14 [ICS,7]
IPCR H01M0004-40 [N,A]; H01M0004-58 [I,A]; H01M0010-0525 [N,A]; H01M0010-36 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49
IT Secondary batteries
(lithium; method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)
IT Battery cathodes
Coating materials
IR lasers
(method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)
IT 10045-86-0P, Ferric phosphate 14940-41-1P, Ferrous phosphate 15365-14-7P 474317-40-3P, Iron lithium phosphate (FeLi0.1-1(PO4)) 474317-41-4P, Iron lithium manganese phosphate (Fe0.2-1LiMn0-0.8(PO4)) 474317-42-5P, Iron lithium manganese phosphate (Fe0.2-0.6LiMn0.4-0.8(PO4))
(method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)
IT 7719-09-7, Thionyl chloride 7791-25-5, Sulfuryl chloride 10025-87-3, Phosphorus oxychloride 10026-04-7,

Silicon tetrachloride 12627-13-3, Silicate 14265-44-2, Phosphate, processes 14808-79-8, Sulfate, processes 53116-81-7, Tetramethylammonium silicate
(precursor; method of forming phosphate powder particle compns. with complex anions for electrodes and batteries)

OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 29 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:428819 HCAPLUS Full-text

DOCUMENT NUMBER: 137:8642

TITLE: Methods of making lithium metal compounds useful as cathode active materials in batteries

INVENTOR(S): Barker, Jeremy; Yazid, Saidi M.; Swoyer, Jeffrey L.

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002044084	A2	20020606	WO 2001-US43633 <--	20011119
WO 2002044084	A3	20020815		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 6645452	B1	20031111	US 2000-724085 <--	20001128
CA 2428201	A1	20020606	CA 2001-2428201 <--	20011119
CA 2428201	C	20081028		
CA 2636694	A1	20020606	CA 2001-2636694 <--	20011119
CA 2638745	A1	20020606	CA 2001-2638745 <--	20011119
CA 2638745	C	20110201		
CA 2638751	A1	20020606	CA 2001-2638751 <--	20011119
AU 2002017799	A	20020611	AU 2002-17799 <--	20011119
EP 1343720	A2	20030917	EP 2001-998506 <--	20011119
EP 1343720	B1	20080326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

JP 2004514639	T	20040520	JP 2002-546034 <--	20011119
JP 4248876	B2	20090402		
EP 1574477	A2	20050914	EP 2005-10853 <--	20011119
EP 1574477	A3	20051109		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
CN 1703370	A	20051130	CN 2001-819694 <--	20011119
CN 100411977	C	20080820		
AT 390385	T	20080415	AT 2001-998506 <--	20011119
EP 2277829	A2	20110126	EP 2010-184419 <--	20011119
R: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE, TR				
TW 544967	B	20030801	TW 2001-129206 <--	20011126
IN 2003CN00824	A	20050422	IN 2003-CN824 <--	20030527
IN 211794	A1	20071228		
KR 851484	B1	20080808	KR 2003-7007055 <--	20030527
US 20040126300	A1	20040701	US 2003-683643 <--	20031009
US 6960331	B2	20051101		
IN 2007CN02204	A	20070928	IN 2007-CN2204 <--	20070522
KR 2007112297	A	20071122	KR 2007-7025241 <--	20071031
KR 851485	B1	20080808		
KR 2007112298	A	20071122	KR 2007-7025243 <--	20071031
KR 851486	B1	20080808		
KR 2007112299	A	20071122	KR 2007-7025245 <--	20071031
KR 851487	B1	20080808		
JP 2009018989	A	20090129	JP 2008-224255 <--	20080902

PRIORITY APPLN. INFO.:	US 2000-724085 <--	A1 20001128
	CA 2001-2428201 <--	A3 20011119
	EP 2001-998506 <--	A3 20011119
	EP 2005-10853 <--	A3 20011119
	JP 2002-546034 <--	A3 20011119
	WO 2001-US43633 <--	W 20011119
	IN 2003-CN824 <--	A3 20030527
	KR 2003-7007055 <--	A3 20030527

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 07 Jun 2002

AB The invention provides a novel method for making lithium mixed metal materials for battery cathodes. The lithium mixed metal materials comprise lithium and

at least one other metal besides lithium. The invention involves the reaction of a metal compound, a phosphate compound, with a reducing agent to reduce the metal and form a metal phosphate. The invention also includes methods of making lithium metal oxides involving reaction of a lithium compound and a metal oxide with a reducing agent.

IT 372075-87-1P, Iron lithium fluoride phosphate FeLiFPO4
(methods of making lithium metal compds. useful as cathode active materials in batteries)

RN 372075-87-1 HCAPLUS

CN Iron lithium fluoride phosphate (FeLiF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	1	7439-93-2
Fe	1	7439-89-6

IPCI C01B0025-00 [ICM,7]

IPCR C01B0025-00 [I,A]; C01B0025-45 [I,A]; C01B0025-455 [I,A]; H01M0004-02 [N,A]; H01M0004-50 [I,A]; H01M0004-505 [I,A]; H01M0004-52 [I,A]; H01M0004-525 [I,A]; H01M0004-58 [I,A]; H01M0010-052 [I,A]; H01M0010-36 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

ST battery cathode lithium metal compd prepn

IT Reduction
(carbothermic; methods of making lithium metal compds. useful as cathode active materials in batteries)

IT Secondary batteries
(lithium; methods of making lithium metal compds. useful as cathode active materials in batteries)

IT Battery cathodes
Thermite process
(methods of making lithium metal compds. useful as cathode active materials in batteries)

IT 7664-38-2D, Phosphoric acid, transition metal compds. 7722-76-1, Ammonium dihydrogen phosphate 7757-87-1, Magnesium phosphate mg3(po4)2 7779-90-0, Zinc phosphate zn3(po4)2 7783-28-0, Diammonium hydrogen phosphate 7789-04-0, Chromium phosphate crpo4 7789-24-4, Lithium fluoride, processes 10045-86-0, Iron phosphate fepo4 13453-80-0, Lithium dihydrogen phosphate 14154-09-7, Manganese phosphate Mn3(PO4)2 14940-41-1, Iron phosphate fe3(po4)2 70172-55-3, Titanium phosphate tipo4
(methods of making lithium metal compds. useful as cathode active materials in batteries)

IT 7664-38-2DP, Phosphoric acid, lithiated transition metal compds. 12162-92-4P, Lithium vanadium oxide liv2o5 15365-14-7P, Iron lithium phosphate felipo4 84159-18-2P, Lithium vanadium phosphate Li3V2(PO4)3 372075-82-6P, Lithium manganese fluoride phosphate LiMnFPO4 372075-83-7P, Lithium vanadium fluoride phosphate (LiVF(PO4)) 372075-84-8P, Chromium lithium fluoride phosphate CrLiFPO4 372075-85-9P, Lithium titanium fluoride phosphate LiTiFPO4 372075-86-0P
372075-87-1P, Iron lithium fluoride phosphate FeLiFPO4 433708-98-6P, Copper lithium fluoride phosphate (CuLiF(PO4)) 433708-99-7P, Cobalt lithium fluoride

phosphate (CoLiF(PO4)) 433709-00-3P, Lithium nickel fluoride phosphate (LiNiF(PO4)) 433709-01-4P 632286-77-2P, Iron lithium magnesium phosphate (Fe0.9LiMg0.1(PO4))
(methods of making lithium metal compds. useful as cathode active materials in batteries)

IT 1333-74-0, Hydrogen, reactions
(methods of making lithium metal compds. useful as cathode active materials in batteries)

IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses
(methods of making lithium metal compds. useful as cathode active materials in batteries)

IT 7440-44-0, Carbon, reactions
(reducing agent; methods of making lithium metal compds. useful as cathode active materials in batteries)

OS.CITING REF COUNT: 15 THERE ARE 15 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 30 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:291865 HCAPLUS Full-text

DOCUMENT NUMBER: 136:312584

TITLE: Method for preparation of cathode active material for nonaqueous lithium secondary battery

INVENTOR(S): Sato, Atsushi; Kuyama, Junji; Fukushima, Yuzuru; Hosoya, Mamoru

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1198019	A2	20020417	EP 2001-123899 <--	20011005
EP 1198019	A3	20041222		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117847	A	20020419	JP 2000-308299 <--	20001006
CN 1348226	A	20020508	CN 2001-130348 <--	20010930
CN 1185730	C	20050119		
MX 2001009974	A	20030820	MX 2001-9974 <--	20011003
CA 2358344	A1	20020406	CA 2001-2358344 <--	20011004
US 20020106562	A1	20020808	US 2001-970573 <--	20011004
TW 523957	B	20030311	TW 2001-124684 <--	20011005
KR 837579	B1	20080613	KR 2001-61393 <--	20011005

PRIORITY APPLN. INFO.: JP 2000-308299 A 20001006 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 19 Apr 2002
AB A nonaq. electrolyte cell includes a cathode containing a cathode active material, which is mainly composed of a compound represented by the general formula LixFePO4, where 0 < x ≤ 1, with the molar ratio of Li3PO4 to a compound represented by the general formula LixFePO4, which ratio is represented by Li3PO4/LiFePO4, being Li3PO4/LiFePO4 ≤ 6.67 + 10-2. Starting materials for the synthesis of compound LixFePO4 where 0 < x ≤ 1 are Li3PO4 and Fe3(PO4)2 or Fe3(PO4)2.nH2O when n denotes a number of hydrates.
IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. lithium secondary battery)
RN 198782-39-7 HCAPLUS
CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,6]; H01M0010-40 [ICS,6]
IPCR H01M0010-40 [I,A]; C01B0025-45 [I,A]; H01M0004-02 [N,A]; H01M0004-48 [I,A]; H01M0004-58 [I,A]; H01M0010-36 [N,A]; H01M0010-44 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium nonaq secondary battery cathode prepn
IT Secondary batteries
(lithium; method for preparation of cathode active material for nonaq. lithium secondary battery)
IT Battery cathodes
Battery electrolytes
(method for preparation of cathode active material for nonaq. lithium secondary battery)
IT Fluoropolymers, uses
(method for preparation of cathode active material for nonaq. lithium secondary battery)
IT 10028-23-6, Phosphoric acid, iron(2+) salt (2:3)octahydrate 10377-52-3, Trilithium phosphate 14940-41-1, Iron phosphate fe3(po4)2 31096-55-6, Phosphoric acid, iron(2+) salt (2:3) hydrate
(method for preparation of cathode active material for nonaq. lithium secondary battery)
IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate
(method for preparation of cathode active material for nonaq. lithium secondary battery)
IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. lithium secondary battery)
IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Pvdf
(method for preparation of cathode active material for nonaq. lithium secondary battery)
OS.CITING REF COUNT: 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 31 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:272913 HCAPLUS Full-text
DOCUMENT NUMBER: 136:297399
TITLE: Nonaqueous electrolyte secondary battery with a compound of an olivinic structure as a cathode active material
INVENTOR(S): Okawa, Tsuyoshi; Hosoya, Mamoru; Kuyama, Junji; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195836	A2	20020410	EP 2001-123892 <--	20011005
EP 1195836	A3	20041124		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117833	A	20020419	JP 2000-308301 <--	20001006
JP 3997702	B2	20071024		
CN 1349266	A	20020515	CN 2001-142412 <--	20010930
CN 1180498	C	20041215		
CA 2358256	A1	20020406	CA 2001-2358256 <--	20011003
US 20020106564	A1	20020808	US 2001-972395 <--	20011005
US 6656635	B2	20031202		
TW 525312	B	20030321	TW 2001-124680 <--	20011005
MX 2001010061	A	20030820	MX 2001-10061 <--	20011005
KR 776523	B1	20071115	KR 2001-61592 <--	20011006
PRIORITY APPLN. INFO.:			JP 2000-308301 A <--	20001006

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 12 Apr 2002
AB A non-aqueous electrolyte secondary cell containing a compound of an olivinic structure as a cathode active material is to be improved in load characteristics and cell capacity. To this end, there is provided a non-aqueous electrolyte secondary cell including a cathode having a layer of a cathode active material containing a compound represented by the general formula LixFe1-yMyPO4, where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with $0.05 \leq x \leq 1.2$ and $0 \leq y \leq 0.8$, an anode having a layer of an anode active material and a non-aqueous electrolyte, wherein the layer of the cathode active material has a film thickness in a range from 25 to 110 μm. If a layer of a cathode active material is provided on each surface of a cathode current collector, the sum of the film thicknesses of the layers of the cathode active material ranges between 50 and 220 μm. The non-aqueous electrolyte may be a liquid-based electrolyte or a polymer electrolyte.

IT 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron iron lithium phosphate (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 407630-25-5, Aluminum iron lithium phosphate (Al0.7Fe0.3Li(PO4)) 407630-29-9, Gallium iron lithium phosphate (Ga0.7Fe0.3Li(PO4)) 407630-40-4, Boron iron lithium phosphate (B0.75Fe0.25Li(PO4))
(nonaq. electrolyte secondary battery with compound of olivinic structure as cathode active material)

RN 407606-22-8 HCAPLUS

CN Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0 - 0.8	7440-47-3
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-24-0 HCAPLUS

CN Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 0.8	7440-48-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-26-2 HCAPLUS

CN Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0 - 0.8	7440-50-8
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-28-4 HCAPLUS
CN Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6
Al	0 - 0.8	7429-90-5

RN 407606-30-8 HCAPLUS
CN Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ga	0 - 0.8	7440-55-3
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-32-0 HCAPLUS
CN Boron iron lithium phosphate (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
B	0 - 0.8	7440-42-8
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-36-4 HCAPLUS
CN Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0 - 0.8	7440-02-0
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-39-7 HCAPLUS
CN Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
V	0 - 0.8	7440-62-2
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-42-2 HCAPLUS
CN Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mo	0 - 0.8	7439-98-7
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-44-4 HCAPLUS
CN Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ti	0 - 0.8	7440-32-6
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-47-7 HCAPLUS
CN Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Zn	0 - 0.8	7440-66-6
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-49-9 HCAPLUS
CN Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mg	0 - 0.8	7439-95-4
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407606-51-3 HCAPLUS
CN Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Nb	0 - 0.8	7440-03-1
Li	0.05 - 1.2	7439-93-2
Fe	0.2 - 1	7439-89-6

RN 407630-25-5 HCAPLUS
CN Aluminum iron lithium phosphate (Al0.7Fe0.3Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1	7439-93-2
Fe	0.3	7439-89-6
Al	0.7	7429-90-5

RN 407630-29-9 HCAPLUS
CN Gallium iron lithium phosphate (Ga0.7Fe0.3Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ga	0.7	7440-55-3
Li	1	7439-93-2
Fe	0.3	7439-89-6

RN 407630-40-4 HCAPLUS
CN Boron iron lithium phosphate (B0.75Fe0.25Li(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
B	0.75	7440-42-8
Li	1	7439-93-2
Fe	0.25	7439-89-6

IPCI H01M0010-40 [ICM,6]; H01M0004-58 [ICS,6]
IPCR H01M0010-052 [I,A]; H01M0004-02 [I,A]; H01M0004-136 [I,A]; H01M0004-58 [I,A]; H01M0006-10 [N,A]; H01M0010-36 [I,A]; H01M0010-38 [N,A]; H01M0010-40 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Ball milling
Battery cathodes
Secondary batteries
(nonaq. electrolyte secondary battery with compound of olivinic structure as cathode active material)
IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 15365-14-7, Iron lithium phosphate felipo4 21324-40-3, Lithium hexafluorophosphate 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron iron lithium phosphate (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4))

407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-19-7 407630-25-5, Aluminum iron lithium phosphate (Al0.7Fe0.3Li(PO4)) 407630-29-9, Gallium iron lithium phosphate (Ga0.7Fe0.3Li(PO4)) 407630-35-7 407630-40-4, Boron iron lithium phosphate (B0.75Fe0.25Li(PO4)) 407630-46-0
(nonaq. electrolyte secondary battery with compound of olivinic structure as cathode active material)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
(nonaq. electrolyte secondary battery with compound of olivinic structure as cathode active material)

OS.CITING REF COUNT: 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 32 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:272909 HCAPLUS Full-text

DOCUMENT NUMBER: 136:297395

TITLE: Method for fabrication of cathode active material and a nonaqueous electrolyte battery

INVENTOR(S): Hosoya, Mamoru; Fukushima, Yuzuru; Sakai, Hidecki; Kuyama, Junji

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 31 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195827	A2	20020410	EP 2001-123894 <--	20011005
EP 1195827	A3	20040310		
EP 1195827	B1	20100915		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117848	A	20020419	JP 2000-308300 <--	20001006
JP 4491949	B2	20100630		
JP 2002117849	A	20020419	JP 2000-308313 <--	20001006
JP 4491950	B2	20100630		
US 20020124386	A1	20020912	US 2001-966918 <--	20010928
US 6814764	B2	20041109		
TW 513822	B	20021211	TW 2001-124109 <--	20010928
CN 1360353	A	20020724	CN 2001-138169 <--	20010930
CN 1243384	C	20060222		

CN 1722497	A	20060118	CN 2005-10087472 <--	20010930
CA 2358250	A1	20020406	CA 2001-2358250 <--	20011003
MX 2001009975	A	20030910	MX 2001-9975 <--	20011003
KR 949444	B1	20100329	KR 2001-61440 <--	20011005
PRIORITY APPLN. INFO.:			JP 2000-308300 <--	A 20001006
			JP 2000-308313 <--	A 20001006
			CN 2001-138169 <--	A3 20010930

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 12 Apr 2002

AB The invention comprises a method for producing a cathode active material having superior cell characteristics through single-phase synthesis of a composite material composed of a compound represented by the general formula LixFe1-yMyPO4 and a carbon material pos. and a method for producing a non-aqueous electrolyte cell employing the so produced cathode active material. To this end, the cathode active material is prepared by a step of mixing the starting materials for synthesis of the compound represented by the general formula LixFe1-yMyPO4, a step of milling a mixture obtained by the mixing step, a step of compressing the mixture obtained by the mixing step to a preset d. and a step of sintering the mixture obtained by the compressing step. A carbon material is added in any one of the above steps prior to the sintering step. The d. of the mixture in the compressing step is set to not less than 1.71 g/cm3 and not larger than 2.45 g/cm3.

IT 198782-39-7, Iron lithium phosphate (FeLi0-1(PO4))
(method for fabrication of cathode active material and nonaq. electrolyte battery)

RN 198782-39-7 HCAPLUS

CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [I,C]; H01M0004-58 [I,A]; H01M0010-00 [I,C]; H01M0010-0565 [I,A]

IPCR H01M0004-58 [I,C]; H01M0004-58 [I,A]; H01M0004-02 [I,C*]; H01M0004-02 [N,A]; H01M0004-136 [I,A]; H01M0010-00 [I,C]; H01M0010-052 [I,A]; H01M0010-0565 [I,A]; H01M0010-36 [I,C*]; H01M0010-36 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST cathode active material nonaq electrolyte battery

IT Ball milling
Battery cathodes
Composites
Secondary batteries
(method for fabrication of cathode active material and nonaq. electrolyte battery)

IT Carbon black, uses
(method for fabrication of cathode active material and nonaq. electrolyte battery)

IT 7440-44-0, Carbon, uses 198782-39-7, Iron lithium

phosphate (FeLi0-1(PO4)) 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt iron lithium phosphate (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper iron lithium phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron iron lithium phosphate (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-34-2, Iron lithium manganese phosphate (Fe0.2-1Li0.05-1.2Mn0-0.8(PO4)) 407606-36-4, Iron lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) 407606-42-2, Iron lithium molybdenum phosphate (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) 407606-44-4, Iron lithium titanium phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, Iron lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) 407606-51-3, Iron lithium niobium phosphate (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-10-8 407630-14-2
(method for fabrication of cathode active material and nonaq. electrolyte battery)

IT 15365-14-7P, Iron lithium phosphate FeLiPO4
(method for fabrication of cathode active material and nonaq. electrolyte battery)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
(method for fabrication of cathode active material and nonaq. electrolyte battery)

OS.CITING REF COUNT: 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 33 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:253129 HCAPLUS Full-text

DOCUMENT NUMBER: 136:281939

TITLE: Nonaqueous electrolyte battery cathode active material capable of reversibly doping/undoping lithium

INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193787	A2	20020403	EP 2001-123181 <--	20010927
EP 1193787	A3	20040303		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110161	A	20020412	JP 2000-301399 <--	20000929
US 20020114754	A1	20020822	US 2001-961895 <--	20010924

TW 518781	B	20030121	TW 2001-123611 <--	20010925
MX 2001009736	A	20040812	MX 2001-9736 <--	20010927
KR 962053	B1	20100608	KR 2001-60569 <--	20010928
CN 1350341	A	20020522	CN 2001-142556 <--	20010929
CN 1187851	C	20050202		
PRIORITY APPLN. INFO.:			JP 2000-301399 <--	A 20000929

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 05 Apr 2002

AB An LiFePO4 carbon composite material is to be synthesized in a single phase to realize superior cell characteristics. To this end, in the preparation of a cathode active material, starting materials for synthesis of a compound having the formula LixFePO4, where 0 < x ≤ 1, are mixed together, milled and sintered. A carbon material is added at one of these steps. As the starting materials for synthesis for LixFePO4, Li3PO4, Fe3PO4, Fe3(PO4)2 or its hydrate Fe3(PO4)2·nH2O, where n is the number of hydrates, are used, and the content of Fe3+ in the total iron in Fe3(PO4)2 or its hydrate Fe3(PO4)2·nH2O is set to 61 wt% or less.

IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

RN 198782-39-7 HCAPLUS

CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,6]; H01M0010-40 [ICS,6]

IPCR C01B0025-37 [I,A]; C01B0031-02 [I,A]; H01M0004-02 [I,A]; H01M0004-36 [N,A]; H01M0004-48 [I,A]; H01M0004-58 [I,A]; H01M0004-62 [N,A]; H01M0010-36 [I,A]; H01M0010-40 [I,A]; H01M0010-44 [N,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery cathode lithium iron phosphate carbon composite

IT Secondary batteries
(lithium; nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Ball milling
Battery cathodes
Composites
Sintering
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Carbonaceous materials (technological products)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Fluoropolymers, uses
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 10028-23-6, Phosphoric acid, iron(2+) salt (2:3) octahydrate 10045-86-0, Ferric phosphate 10377-52-3, Lithium phosphate li3po4 31096-55-6

(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 15365-14-7, Iron lithium phosphate FeLiPO4 21324-40-3, Lithium hexafluorophosphate
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 24937-79-9, Pvdf
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 872-36-6, Vinylene carbonate
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (9 CITINGS)
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 34 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:253128 HCAPLUS Full-text
DOCUMENT NUMBER: 136:281938
TITLE: Nonaqueous electrolyte battery cathode active material capable of reversibly doping/undoping lithium
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193786	A2	20020403	EP 2001-123180 <--	20010927
EP 1193786	A3	20040303		
EP 1193786	B1	20070425		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110163	A	20020412	JP 2000-301401 <--	20000929
US 20020061274	A1	20020523	US 2001-965273 <--	20010927
US 6797431	B2	20040928		
TW 519776	B	20030201	TW 2001-123924 <--	20010927
MX 2001009738	A	20040812	MX 2001-9738 <--	20010927
KR 884216	B1	20090217	KR 2001-60496 <--	20010928
CN 1349265	A	20020515	CN 2001-142532	20010929

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CN 1180494 C 20041215

PRIORITY APPLN. INFO.: JP 2000-301401 A 20000929

<--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 05 Apr 2002

AB A LiFePO4 carbon composite material is to be synthesized in a single phase satisfactorily to achieve superior cell characteristics. In preparing a cathode active material, starting materials for synthesis of a compound represented by the general formula LixFePO4, where 0 < x ≤ 1, are mixed, milled and a carbon material is added to the resulting mass at an optional time point in the course of mixing, milling and sintering. Li3PO4, Fe3(PO4)2 or its hydrates Fe3(PO4)2·nH2O, where n denotes the number of hydrates, are used as the starting materials for synthesis of LixFePO4. The temperature of a product from the sintering is set to 305° or less when the product from the sintering is exposed to atmospheric The oxygen concentration in a sintering atmospheric is set to 1012 ppm in volume or less at the time point of sintering.

IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

RN 198782-39-7 HCAPLUS

CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [I,C]; H01M0004-58 [I,A]; H01M0010-36 [I,C]; H01M0010-40 [I,A]

IPCR C01G0049-00 [I,A]; C01B0031-02 [I,A]; H01M0004-02 [I,A]; H01M0004-36 [N,A]; H01M0004-48 [I,A]; H01M0004-58 [I,A]; H01M0004-62 [N,A]; H01M0010-36 [I,A]; H01M0010-40 [I,A]; H01M0010-42 [N,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery cathode lithium iron phosphate carbon composite

IT Secondary batteries
(lithium; nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Battery cathodes
Composites
Sintering
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Carbon black, uses
Carbonaceous materials (technological products)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Fluoropolymers, uses
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Ball milling
(planetary; nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 10028-23-6, Phosphoric acid, iron(2+) salt (2:3) octahydrate 10377-52-3, Lithium phosphate 14940-41-1, Iron phosphate fe3(po4)2 31096-55-6

(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 872-36-6, Vinylene carbonate 7440-44-0, Carbon, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Poly(vinylidene fluoride)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 15365-14-7P, Iron lithium phosphate felipo4 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
IT 7782-44-7, Oxygen, uses
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)
OS.CITING REF COUNT: 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)
REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 35 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:253127 HCAPLUS Full-text
DOCUMENT NUMBER: 136:281937
TITLE: Nonaqueous electrolyte battery with cathode active material capable of reversibly doping/undoping lithium
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193785	A2	20020403	EP 2001-122769 <--	20010921
EP 1193785	A3	20040303		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110164	A	20020412	JP 2000-301402 <--	20000929
US 20020059719	A1	20020523	US 2001-956514 <--	20010919
US 7101521	B2	20060905		
TW 513823	B	20021211	TW 2001-123221 <--	20010920
MX 2001009681	A	20020412	MX 2001-9681 <--	20010926
CN 1346159	A	20020424	CN 2001-138523 <--	20010928
CN 1223028	C	20051012		

KR 835127 B1 20080605 KR 2001-60520 20010928
<--
PRIORITY APPLN. INFO.: JP 2000-301402 A 20000929
<--
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 05 Apr 2002
AB A LiFePO4 carbon composite material is to be synthesized in a single phase satisfactorily to prevent the deterioration of the performance of the cathode active material from occurring and achieve superior cell characteristics. In preparing a cathode active material, starting materials for synthesis of a compound represented by the general formula LixFePO4, where 0 < x ≤ 1, are mixed, milled and a carbon material is added to the resulting mass at an optional time point in the course of mixing, milling and sintering. Li3PO4, Fe3(PO4)2 or its hydrates Fe3(PO4)2·nH2O, where n denotes the number of hydrates, are used as the starting materials for synthesis of LixFePO4. The temperature of a product from the sintering is set to 305° or less when the product from the sintering is exposed to atmospheric
IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
RN 198782-39-7 HCAPLUS
CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,6]; H01M0010-40 [ICS,6]
IPCR C01B0025-45 [I,A]; C01B0031-02 [I,A]; H01M0004-02 [N,A]; H01M0004-04 [I,A]; H01M0004-36 [N,A]; H01M0004-48 [I,A]; H01M0004-58 [I,A]; H01M0004-62 [N,A]; H01M0010-36 [I,A]; H01M0010-40 [I,A]; H01M0010-44 [N,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cathode lithium iron phosphate carbon composite
IT Secondary batteries
(lithium; nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT Battery cathodes
Composites
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT Carbonaceous materials (technological products)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT Fluoropolymers, uses
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT Ball milling
(planetary; nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT 10377-52-3, Lithium phosphate li3po4 14940-41-1, Iron phosphate fe3(po4)2 31096-55-6
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate

7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
21324-40-3, Lithium hexafluorophosphate
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT 7440-44-0, Carbon, uses 24937-79-9, Pvdf
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
IT 15365-14-7P, Iron lithium phosphate FeLiPO4 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)
OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 36 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:253126 HCAPLUS Full-text
DOCUMENT NUMBER: 136:265826
TITLE: Method for the preparation of cathode active material for a nonaqueous electrolyte battery
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193784	A2	20020403	EP 2001-122752 <--	20010921
EP 1193784	A3	20040310		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110165	A	20020412	JP 2000-301403 <--	20000929
JP 4491946	B2	20100630		
TW 535316	B	20030601	TW 2001-123360 <--	20010921
US 20020041998	A1	20020411	US 2001-961863 <--	20010924
US 6811924	B2	20041102		
MX 2001009737	A	20040812	MX 2001-9737 <--	20010927
KR 777932	B1	20071120	KR 2001-60645 <--	20010928
CN 1349264	A	20020515	CN 2001-142531 <--	20010929
CN 1177383	C	20041124		

PRIORITY APPLN. INFO.: JP 2000-301403 A 20000929 <--
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 05 Apr 2002

AB A LiFePO4 carbon composite material is to be synthesized in a single phase satisfactorily to achieve superior cell characteristics. In preparing a cathode active material, a starting material for synthesis of a compound represented by the general formula LixFePO4, where 0<+≤1, is mixed, milled and sintered and a carbon material is added to the resulting mass at an optional time point in the course of mixing, milling and sintering. Li3PO4, Fe3(PO4)2 or its hydrates Fe3(PO4)2·nH2O, where n denotes the number of hydrates, are used as the starting material for synthesis of LixFePO4. The particle size distribution of particles of the starting material for synthesis following the milling with the particle size not less than 3 μm is set to 2.2% or less in terms of the volumetric integration frequency.

IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. electrolyte battery)

RN 198782-39-7 HCAPLUS

CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,6]; H01M0010-40 [ICS,6]

IPCR C01B0025-45 [I,A]; C01B0031-02 [I,A]; H01M0004-02 [I,A]; H01M0004-58 [I,A]; H01M0010-36 [I,A]; H01M0010-40 [I,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery cathode lithium iron phosphate carbon composite

IT Secondary batteries
(lithium; method for preparation of cathode active material for nonaq. electrolyte battery)

IT Battery cathodes
Particle size distribution
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT Carbon black, uses
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT Ball milling
(planetary; method for preparation of cathode active material for nonaq. electrolyte battery)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3, Lithium hexafluorophosphate
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT 7440-44-0, Carbon, uses
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT 15365-14-7P, Iron lithium phosphate FeLiPO4 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. electrolyte battery)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 37 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2002:253125 HCAPLUS Full-text
DOCUMENT NUMBER: 136:265825
TITLE: Method for the preparation of cathode active material for a nonaqueous electrolyte battery
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193783	A2	20020403	EP 2001-122751 <--	20010921
EP 1193783	A3	20030514		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110162	A	20020412	JP 2000-301400 <--	20000929
JP 3921931	B2	20070530		
TW 540181	B	20030701	TW 2001-123364 <--	20010921
EP 2256845	A1	20101201	EP 2010-10344 <--	20010921
R: DE, FI, FR, GB, SE				
EP 2256846	A1	20101201	EP 2010-10345 <--	20010921
R: DE, FI, FR, GB, SE				
US 20020102459	A1	20020801	US 2001-961862 <--	20010924
MX 2001009735	A	20040812	MX 2001-9735 <--	20010927
KR 968054	B1	20100708	KR 2001-60502 <--	20010928
CN 1346162	A	20020424	CN 2001-137901 <--	20010929
CN 1180497	C	20041215		
US 20070117013	A1	20070524	US 2006-565258 <--	20061130
KR 2008091067	A	20081009	KR 2008-91837 <--	20080918
KR 951328	B1	20100408		

PRIORITY APPLN. INFO.:
JP 2000-301400 A 20000929 <--
EP 2001-122751 A3 20010921 <--
US 2001-961862 A3 20010924 <--
KR 2001-60502 A3 20010928 <--

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
ED Entered STN: 05 Apr 2002

AB A nonaq. electrolyte cell is disclosed having superior electronic conductivity and superior cell characteristics. A cathode active material used for the cell is a composite material of a compound having the formula LixFePO4, where 0<x≤1.0, and a carbon material, wherein the sp. surface area as found by the Brunauer Emmet Teller formula is not less than 10.3 m2/g.

IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. electrolyte battery)

RN 198782-39-7 HCAPLUS

CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,6]; H01M0010-40 [ICS,6]

IPCR H01M0004-48 [I,A]; C01B0031-02 [I,A]; H01M0004-02 [I,A]; H01M0004-36 [N,A]; H01M0004-58 [I,A]; H01M0004-62 [N,A]; H01M0010-36 [I,A]; H01M0010-40 [I,A]; H01M0010-44 [N,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonaq electrolyte cathode lithium iron phosphate

IT Secondary batteries
(lithium; method for preparation of cathode active material for nonaq. electrolyte battery)

IT Battery cathodes
Surface area
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT Carbon black, uses
Carbonaceous materials (technological products)
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT Fluoropolymers, uses
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 21324-40-3, Lithium hexafluorophosphate
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT 24937-79-9, Pvdf
(method for preparation of cathode active material for nonaq. electrolyte battery)

IT 15365-14-7P, Iron lithium phosphate FeLiPO4 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. electrolyte battery)

OS.CITING REF COUNT: 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 38 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2002:169249 HCAPLUS Full-text

DOCUMENT NUMBER: 136:203096

TITLE: Method for preparation of cathode active material for nonaqueous electrolyte battery
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 21 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1184920	A2	20020306	EP 2001-120637 <--	20010830
EP 1184920	A3	20040303		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002075364	A	20020315	JP 2000-261277 <--	20000830
JP 4151210	B2	20080917		
TW 518785	B	20030121	TW 2001-121059 <--	20010827
MX 2001008733	A	20040812	MX 2001-8733 <--	20010829
KR 816272	B1	20080325	KR 2001-52393 <--	20010829
CN 1340869	A	20020320	CN 2001-135562 <--	20010830
CN 1199302	C	20050427		
PRIORITY APPLN. INFO.:			JP 2000-261277 A <--	20000830

ED Entered STN: 08 Mar 2002
AB A cathode active material improved in electron conductivity and a non-aqueous electrolyte cell employing this cathode active material and which is improved in cell capacity and cyclic characteristics are disclosed. The cathode active material is composed of a compound having the general formula LixFePO4 where 0 < x ≤ 1.0, and a carbon material, with the carbon content per unit weight being not less than 3 wt% and with the powder d. being not lower than 2.2 g/cm3.
IT 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. electrolyte battery)
RN 198782-39-7 HCAPLUS
CN Iron lithium phosphate (FeLi0-1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 1	7439-93-2
Fe	1	7439-89-6

IPCI H01M0004-58 [ICM,6]; H01M0004-62 [ICS,6]; H01M0004-04 [ICS,6]
IPCR H01M0010-40 [I,A]; C01B0031-02 [I,A]; H01M0004-02 [I,A]; H01M0004-36 [N,A]; H01M0004-58 [I,A]; H01M0004-62 [I,A]; H01M0010-36 [I,A]; H01M0010-38 [I,A]
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST cathode active material prepn nonaq electrolyte battery
IT Secondary batteries
(lithium; method for preparation of cathode active material for nonaq. electrolyte battery)
IT Battery cathodes
Sintering
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT Carbonaceous materials (technological products)
Fluoropolymers, uses
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT Carbon black, uses
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT 10045-86-0, Phosphoric acid, iron(3+) salt (1:1) 10377-52-3, Lithium phosphate
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT 24937-79-9, Pvdf
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT 15365-14-7P, Iron lithium phosphate FeLiPO4 198782-39-7P, Iron lithium phosphate (FeLi0-1(PO4))
(method for preparation of cathode active material for nonaq. electrolyte battery)
IT 7440-44-0, Carbon, uses
(method for preparation of cathode active material for nonaq. electrolyte battery)
OS.CITING REF COUNT: 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 39 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 2001:192597 HCAPLUS Full-text
DOCUMENT NUMBER: 134:210598
TITLE: Preparation of lithium-containing phosphates for battery use
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid
PATENT ASSIGNEE(S): Valence Technology, Inc., USA
SOURCE: U.S., 13 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6203946	B1	20010320	US 1998-204944 <--	19981203
US 20010021472	A1	20010913	US 2001-776843 <--	20010205

US 6720110	B2	20040413		
US 20040086784	A1	20040506	US 2003-681563	20031006
			<--	
PRIORITY APPLN. INFO.:			US 1996-717979	A1 19960923
			<--	
			WO 1997-US15544	A1 19970904
			<--	
			US 1998-204944	A1 19981203
			<--	
			US 2001-776843	A1 20010205
			<--	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

ED Entered STN: 21 Mar 2001

AB The invention provides an electrochem. cell which comprises a first electrode and a second electrode which is a counter electrode to the first electrode. The first electrode comprises a phosphorous compound of the nominal general formula Li3E'aE"b(PO4)3, desirably at least one E is a metal; and preferably, Li3M'M"(PO4)3. E' and E" are the same or different from one another. Where E' and E" are the same, they are preferably metals having more than one oxidation state. Where E' and E" are different from one another, they are preferably selected from the group of metals where at least one of E' and E" has more than one oxidation state.

IT 329025-35-6P, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(preparation of lithium-containing phosphates for battery use)

RN 329025-35-6 HCAPLUS

CN Iron lithium phosphate (Fe2Li1-3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

INCL 429231100

IPCI H01M0004-58 [ICM,7]; H01M0004-48 [ICS,7]

IPCR H01M0004-02 [N,A]; H01M0004-04 [N,A]; H01M0004-58 [I,A]; H01M0010-0525 [I,A]; H01M0010-36 [I,A]

NCL 429/231.100; 429/218.100; 429/221.000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Secondary batteries
(lithium; preparation of lithium-containing phosphates for battery use)

IT Battery cathodes
(preparation of lithium-containing phosphates for battery use)

IT 36058-25-0P, Iron lithium phosphate Fe2Li3(PO4)3 69104-85-4P, Chromium lithium phosphate Cr2Li3(PO4)3 84159-18-2P, Lithium vanadium phosphate Li3V2(PO4)3 285564-74-1P 329025-35-6P, Iron lithium phosphate (Fe2Li1-3(PO4)3) 329025-36-7P 329025-38-9P 329025-39-0P
(preparation of lithium-containing phosphates for battery use)

OS.CITING REF COUNT: 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS RECORD (13 CITINGS)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 40 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 2000:774123 HCAPLUS Full-text

DOCUMENT NUMBER: 133:352634

TITLE: Electrode materials having increased surface conductivity
INVENTOR(S): Ravet, Nathalie; Besner, Simon; Simoneau, Martin; Vallee, Alain; Armand, Michel; Magnan, Jean-francois
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: Eur. Pat. Appl., 22 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1049182	A2	20001102	EP 2000-401207 <--	20000502
EP 1049182	A3	20040211		
EP 1049182	B1	20080102		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2270771	A1	20001030	CA 1999-2270771 <--	19990430
CA 2307119	A1	20001030	CA 2000-2307119 <--	20000428
CA 2307119	C	20090728		
CA 2625896	A1	20001030	CA 2000-2625896 <--	20000428
CA 2658728	A1	20001030	CA 2000-2658728 <--	20000428
CA 2658741	A1	20001030	CA 2000-2658741 <--	20000428
CA 2658741	C	20100928		
CA 2658748	A1	20001030	CA 2000-2658748 <--	20000428
JP 2001015111	A	20010119	JP 2000-132779 <--	20000501
EP 1796189	A2	20070613	EP 2007-4289 <--	20000502
EP 1796189	A3	20070620		
EP 1796189	B1	20090325		
R: DE, FR, GB, IT				
US 20020195591	A1	20021226	US 2002-175794 <--	20020621
US 6855273	B2	20050215		
US 20040140458	A1	20040722	US 2003-740449 <--	20031222
US 6962666	B2	20051108		
US 20060060827	A1	20060323	US 2005-266339 <--	20051104
US 7344659	B2	20080318		
US 20080257721	A1	20081023	US 2008-33636 <--	20080219
US 7815819	B2	20101019		
JP 2008186807	A	20080814	JP 2008-41303 <--	20080222
US 20110086273	A1	20110414	US 2010-899067 <--	20101006
US 20110097479	A1	20110428	US 2010-951335 <--	20101122

PRIORITY APPLN. INFO.:

CA 1999-2270771	A	19990430
<--		
CA 2000-2307119	A3	20000428
<--		
US 2000-560572	B1	20000428
<--		
JP 2000-132779	A3	20000501
<--		
EP 2000-401207	A3	20000502
<--		
US 2002-175794	A3	20020621
<--		
US 2003-740449	A1	20031222
<--		
US 2005-266339	A3	20051104
<--		
US 2008-33636	A1	20080219

ED Entered STN: 05 Nov 2000

AB Intercalated electrode materials comprising complex oxides, especially Li oxides, are prepared, suitable for redox reaction by exchange of alkali metal ions (especially Li) and electrons with an electrolyte. The complex oxide electrodes can be used in batteries, supercapacitors or electrochromic light moderators. The complex oxides have the general formula AaMmZzOoNnFf, where A is alkali metal (e.g., Li), M is ≥1 transition metal (e.g., Fe, Mn, V, Ti, Mo, Nb, Zn, W), Z is ≥1 nonmetal (e.g., P, S, Si, Se, As, Ge, B, Sn), and a,m,z,o,n,f are chosen for elec. neutrality. A conductive carbon coating is formed or deposited on the surface of the electrode material, e.g., by pyrolysis of an organic material, hydrocarbons or polymers, for increased surface conductivity

IT 304905-34-8P
(electrode materials having increased surface conductivity)

RN 304905-34-8 HCAPLUS

CN Iron lithium manganese phosphate silicate (Fe0.8Li1.2Mn0.2(PO4)0.8(SiO4)0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.2	17181-37-2
O4P	0.8	14265-44-2
Mn	0.2	7439-96-5
Li	1.2	7439-93-2
Fe	0.8	7439-89-6

IPCI H01M0004-48 [I,C]; H01M0004-48 [I,A]; H01M0004-04 [I,C]; H01M0004-04 [I,A]; H01M0004-58 [I,C]; H01M0004-58 [I,A]; H01M0004-62 [I,C]; H01M0004-62 [I,A]

IPCR H01M0006-16 [I,A]; C01B0031-02 [I,A]; H01G0009-00 [I,A]; H01G0009-155 [I,A]; H01M0004-136 [I,A]; H01M0004-24 [I,A]; H01M0004-36 [N,A]; H01M0004-48 [I,A]; H01M0004-485 [I,A]; H01M0004-58 [I,A]; H01M0004-62 [I,A]; H01M0006-18 [I,A]; H01M0010-052 [N,A]; H01M0010-36 [N,A]

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72, 76

IT Battery cathodes
Capacitor electrodes
Electrochromic materials
Electrodes
Primary batteries

Secondary batteries
Thermal decomposition
(electrode materials having increased surface conductivity)
IT Primary batteries
Secondary batteries
(lithium; electrode materials having increased surface conductivity)
IT Fluorides, uses
(oxyfluorides; electrode materials having increased surface conductivity)
IT 7440-44-0P, Carbon, uses 15365-14-7P, Iron lithium phosphate (FeLiPO4) 30734-08-8P, Lithium manganese silicate Li2MnSiO4 39302-37-9P, Lithium titanium oxide 180984-63-8P, Lithium magnesium titanium oxide 252943-50-3P, Lithium vanadium phosphate silicate Li3.5V2(PO4)2.5(SiO4)0.5 304905-30-4P 304905-31-5P, Iron lithium fluoride (FeLi0.2F3) 304905-32-6P, Lithium manganese nitride oxide (Li3MnNO) 304905-33-7P 304905-34-8P 304905-35-9P, Lithium magnesium titanium oxide (Li3.5Mg0.5Ti4O12) 304905-36-0P, Iron lithium phosphorus silicon oxide 304905-37-1P 304905-38-2P, Iron lithium phosphorus fluoride oxide 304905-39-3P 304905-40-6P 304905-41-7P 304905-42-8P
(electrode materials having increased surface conductivity)
IT 78-10-4 109-72-8, Butyl lithium, uses 546-68-9 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1344-43-0, Manganese oxide MnO, uses 5931-89-5, Cobalt acetate 5965-38-8, Cobalt oxalate dihydrate 6108-17-4, Lithium acetate dihydrate 6156-78-1, Manganese acetate tetrahydrate 6556-16-7, Manganese oxalate dihydrate 7722-76-1, Ammonium dihydrogen phosphate 7783-50-8, Iron fluoride FeF3 7803-55-6, Ammonium vanadate 9003-01-4, Polyacrylic acid 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 10028-22-5, Ferric sulfate 10102-24-6, Lithium silicate Li2SiO3 10377-52-3, Lithium phosphate Li3PO4 13463-10-0, Ferric phosphate dihydrate 14567-67-0, Vivianite 16674-78-5, Magnesium acetate tetrahydrate 25656-42-2, Lithium polyacrylate 26134-62-3, Lithium nitride 145673-07-0
(electrode materials having increased surface conductivity)
IT 57-50-1, reactions 77-47-4, Hexachlorocyclopentadiene 98-00-0D, Furfuryl alcohol, derivs., polymers 100-42-5D, Styrene, derivs., polymers 107-13-1D, Acrylonitrile, derivs., polymers 108-05-4D, Vinyl acetate, derivs., polymers 108-95-2D, Phenol, derivs., polymers, reactions 115-07-1, 1-Propene, reactions 120-12-7, Anthracene, reactions 128-69-8D, 3,4,9,10-Perylenetetracarboxylic acid dianhydride, polymers with Jeffamine 600 198-55-0D, Perylene, derivs., polymers 630-08-0, Carbon monoxide, reactions 996-70-3, Tetrakis(dimethylamino)ethylene 1321-74-0D, Divinylbenzene, derivs., polymers 6674-22-2, DBU 9002-88-4 9002-89-5 9003-07-0, Polypropylene 9003-17-2D, Polybutadiene, derivs. 9004-34-6D, Cellulose, derivs., reactions 9004-35-7, Cellulose acetate 9005-25-8D, Starch, derivs., reactions 15133-82-1, Tetrakis(triphenylphosphine)nickel 25014-41-9, Polyacrylonitrile 51736-72-2, Polyvinylidene bromide 157889-12-8, Jeffamine ED 600-perylenetetracarboxylic acid dianhydride copolymer
(electrode materials having increased surface conductivity)
OS.CITING REF COUNT: 100 THERE ARE 100 CAPLUS RECORDS THAT CITE THIS RECORD (122 CITINGS)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L76 ANSWER 41 OF 41 HCAPLUS COPYRIGHT 2011 ACS on STN
ACCESSION NUMBER: 1998:221666 HCAPLUS Full-text

DOCUMENT NUMBER: 129:20826
ORIGINAL REFERENCE NO.: 129:4335a,4338a
TITLE: New cathode materials for rechargeable lithium batteries: the 3-D framework structures Li3Fe2(XO4)3 (X = P, As)
AUTHOR(S): Masquelier, C.; Padhi, A. K.; Nanjundaswamy, K. S.; Goodenough, J. B.
CORPORATE SOURCE: Center for Materials Science and Engineering, University of Texas at Austin, Austin, TX, 78712-1063, USA
SOURCE: Journal of Solid State Chemistry (1998), 135(2), 228-234
CODEN: JSSCBI; ISSN: 0022-4596
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 22 Apr 1998
AB Electrochem. insertion of lithium into four Li3Fe2(XO4)3 polymorphs (X = P or As) with 3-D framework structures was carried out in "Li/LiClO4 (PC:DME)/cathode" coin cells. Approx. 2 Li per formula unit could be reversibly inserted into the three different structures, which corresponds to the reduction of all Fe3+ to Fe2+ between 2.5 and 3.5 V vs lithium. The position of the Fe3+/Fe2+ redox couple below the lithium-anode Fermi energy is nearly independent of the structure and of whether X = P or As. There is, however, a clear dependence of (i) the shape of the Vcc vs x curves for Li3+xFe2(XO4)3 and (ii) the charge-discharge rate capabilities on the crystal structure of the cathode material.
IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
(new cathode materials for rechargeable lithium batteries: 3-D framework structures Li3Fe2(XO4)3 (X = P, As))
RN 198782-41-1 HCAPLUS
CN Iron lithium phosphate (Fe2Li3-5(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	3 - 5	7439-93-2
Fe	2	7439-89-6

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 56
ST rechargeable lithium battery cathode electrochem insertion; ionic conductor iron phosphate arsenate structure
IT Electric charge
(electrochem. charge-discharge curves for the first cycle of lithium iron phosphate/arsenate cathodes)
IT Current density
(in comparison of capacities for polymorphs Li3Fe2(PO4)3 cathode materials for rechargeable lithium batteries)
IT Carbon black, uses
(in formation of Li3Fe2(XO4)3 (X = P, As) cathode for rechargeable lithium batteries)
IT Fluoropolymers, uses
(in formation of Li3Fe2(XO4)3 (X = P, As) cathode for rechargeable lithium batteries)
IT Battery cathodes
Secondary batteries
(new cathode materials for rechargeable lithium

batteries: 3-D framework structures Li3Fe2(XO4)3 (X = P, As))
IT Oxidation, electrochemical
(of Fe2+ in lithium iron phosphate and arsenate cathodes)
IT Reduction, electrochemical
(of Fe3+ in lithium iron phosphate and arsenate cathodes)
IT 16986-74-6
(as cathode materials for rechargeable lithium batteries)
IT 16570-18-6
(cathode materials for rechargeable lithium batteries)
IT 207733-44-6, Iron lithium phosphate (Fe2Li5(PO4)3)
(electrochem. formation: new cathode materials for rechargeable lithium batteries)
IT 207733-39-9, Iron lithium phosphate (Fe2Li4(PO4)3)
(electrochem. formation: new cathode materials for rechargeable lithium batteries)
IT 9002-84-0, PTFE
(in formation of Li3Fe2(XO4)3 (X = P, As) cathode for rechargeable lithium batteries)
IT 36058-25-0P 101324-14-5P
(monoclinic and rhombohedral; as new cathode materials for rechargeable lithium batteries; lithium electrochem., intercalation/deintercalation by)
IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
(new cathode materials for rechargeable lithium batteries: 3-D framework structures Li3Fe2(XO4)3 (X = P, As))
IT 207733-37-7, Iron lithium arsenate (Fe2Li3-4.8(AsO4)3)
(new cathode materials for rechargeable lithium batteries: electrochem. formation of)
OS.CITING REF COUNT: 145 THERE ARE 145 CAPLUS RECORDS THAT CITE THIS RECORD (146 CITINGS)
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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=> d his nofile

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     FILE 'HCAPLUS' ENTERED AT 11:15:31 ON 01 JUN 2011
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                 SEL RN

     FILE 'REGISTRY' ENTERED AT 11:15:44 ON 01 JUN 2011
L2            29 SEA SPE=ON  ABB=ON  PLU=ON  (10025-73-7/BI OR 10241-05-1/BI
                  OR 22519-64-8/BI OR 7447-39-4/BI OR 7550-45-0/BI OR
                 7646-78-8/BI OR 7646-85-7/BI OR 7718-98-1/BI OR 7772-99-8/B
                 I OR 851190-38-0/BI OR 851190-39-1/BI OR 851190-40-4/BI OR
                 851190-41-5/BI OR 851190-42-6/BI OR 851190-43-7/BI OR
                 851190-44-8/BI OR 851190-45-9/BI OR 851190-46-0/BI OR
                 851190-47-1/BI OR 851190-48-2/BI OR 851190-49-3/BI OR
                 851190-50-6/BI OR 851190-51-7/BI OR 851190-53-9/BI OR
                 851190-54-0/BI OR 851190-55-1/BI OR 851190-56-2/BI OR
                 851190-57-3/BI OR 851190-58-4/BI)
L3            20 SEA SPE=ON  ABB=ON  PLU=ON  L2 AND PO4
L4            20 SEA SPE=ON  ABB=ON  PLU=ON  L2 AND O4P
L5            20 SEA SPE=ON  ABB=ON  PLU=ON  L2 AND FE/ELS
L6          1828 SEA SPE=ON  ABB=ON  PLU=ON  (LI(L)FE(L)P(L)O)/ELS
L7          1338 SEA SPE=ON  ABB=ON  PLU=ON  L6 AND O4P
L8           121 SEA SPE=ON  ABB=ON  PLU=ON  L7 AND 4/ELC.SUB
L9             0 SEA SPE=ON  ABB=ON  PLU=ON  L8 AND L2
L10          330 SEA SPE=ON  ABB=ON  PLU=ON  L7 AND (V OR CR OR CU OR ZN OR
                 IN OR SN OR MO OR TI)/ELS
L11           20 SEA SPE=ON  ABB=ON  PLU=ON  L10 AND L2
L12            9 SEA SPE=ON  ABB=ON  PLU=ON  L2 NOT L11

     FILE 'HCAPLUS' ENTERED AT 11:27:21 ON 01 JUN 2011
L13          189 SEA SPE=ON  ABB=ON  PLU=ON  L10
L14        99730 SEA SPE=ON  ABB=ON  PLU=ON  L12
L15            8 SEA SPE=ON  ABB=ON  PLU=ON  L13 AND L14
L16          761 SEA SPE=ON  ABB=ON  PLU=ON  L7
L17           12 SEA SPE=ON  ABB=ON  PLU=ON  L14 AND L16
L18           12 SEA SPE=ON  ABB=ON  PLU=ON  L15 OR L17
L19            1 SEA SPE=ON  ABB=ON  PLU=ON  L13 AND L1
L20          595 SEA SPE=ON  ABB=ON  PLU=ON  L16 AND ELECTROCHEM?/SC,SX
L21          149 SEA SPE=ON  ABB=ON  PLU=ON  L20 AND (HALIDE? OR CHLORIDE?
                 OR FLUORIDE? OR BROMIDE? OR IODIDE?)
                 E SECONDARY BATTERIES/CT
L22        95725 SEA SPE=ON  ABB=ON  PLU=ON  "SECONDARY BATTERIES"+PFT/CT
L23          121 SEA SPE=ON  ABB=ON  PLU=ON  L21 AND L22
L24           49 SEA SPE=ON  ABB=ON  PLU=ON  L23 AND PROC/RL
L25           15 SEA SPE=ON  ABB=ON  PLU=ON  L13 AND L24
L26            1 SEA SPE=ON  ABB=ON  PLU=ON  L25 AND L1
L27               QUE SPE=ON  ABB=ON  PLU=ON  CATHODE# OR POSITIVE ELECTRODE#
L28           42 SEA SPE=ON  ABB=ON  PLU=ON  L24 AND L27
L29           33 SEA SPE=ON  ABB=ON  PLU=ON  L28 AND PREP/RL
L30           39 SEA SPE=ON  ABB=ON  PLU=ON  L25 OR L29
L31           34 SEA SPE=ON  ABB=ON  PLU=ON  L30 NOT L18

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                 E FE.LI.O4P/MF
L32          113 SEA SPE=ON  ABB=ON  PLU=ON  FE.LI.O4P/MF
L33            0 SEA SPE=ON  ABB=ON  PLU=ON  L32 NOT TIS/CI
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L34          113 SEA SPE=ON  ABB=ON  PLU=ON  L32 AND 1/LI
L35          113 SEA SPE=ON  ABB=ON  PLU=ON  L34 AND 1/FE
L36            0 SEA SPE=ON  ABB=ON  PLU=ON  L35 AND LITHIUM IRON PHOSPHATE/
                 CN
                 E IRON LITHIUM PHOSPHATE/CN
L37            1 SEA SPE=ON  ABB=ON  PLU=ON  "IRON LITHIUM PHOSPHATE"/CN

     FILE 'HCAPLUS' ENTERED AT 12:15:58 ON 01 JUN 2011
L38          497 SEA SPE=ON  ABB=ON  PLU=ON  L37
L39          368 SEA SPE=ON  ABB=ON  PLU=ON  L38 AND L27
L40          297 SEA SPE=ON  ABB=ON  PLU=ON  L39 AND L22
L41          100 SEA SPE=ON  ABB=ON  PLU=ON  L40 AND PROC/RL
L42            3 SEA SPE=ON  ABB=ON  PLU=ON  L41 AND L13
L43           12 SEA SPE=ON  ABB=ON  PLU=ON  L38 AND L13
L44           38 SEA SPE=ON  ABB=ON  PLU=ON  L38 AND L16
L45           38 SEA SPE=ON  ABB=ON  PLU=ON  L43 OR L42 OR L44
L46           34 SEA SPE=ON  ABB=ON  PLU=ON  L45 AND ELECTROCHEM?/SC,SX
L47           13 SEA SPE=ON  ABB=ON  PLU=ON  L46 AND (1940-2006)/PRY,AY,PY
L48           16 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND (1940-2006)/PRY,AY,PY
L49            3 SEA SPE=ON  ABB=ON  PLU=ON  L18 AND (1940-2006)/PRY,AY,PY
L50           29 SEA SPE=ON  ABB=ON  PLU=ON  L47 OR L48
L51           29 SEA SPE=ON  ABB=ON  PLU=ON  L50 NOT L49
L52          125 SEA SPE=ON  ABB=ON  PLU=ON  L8
L53          111 SEA SPE=ON  ABB=ON  PLU=ON  L52 AND ELECTROCHEM?/SC,SX
L54           80 SEA SPE=ON  ABB=ON  PLU=ON  L53 AND L22
L55           65 SEA SPE=ON  ABB=ON  PLU=ON  L54 AND L27
L57           37 SEA SPE=ON  ABB=ON  PLU=ON  L55 AND (1840-2006)/PRY,AY,PY
L58            3 SEA SPE=ON  ABB=ON  PLU=ON  L18 AND (1840-2006)/PRY,AY,PY
L59           13 SEA SPE=ON  ABB=ON  PLU=ON  L46 AND (1840-2006)/PRY,AY,PY
L60           16 SEA SPE=ON  ABB=ON  PLU=ON  L31 AND (1840-2006)/PRY,AY,PY
L61           29 SEA SPE=ON  ABB=ON  PLU=ON  L59 OR L60
L62           29 SEA SPE=ON  ABB=ON  PLU=ON  L61 NOT L58
L63           37 SEA SPE=ON  ABB=ON  PLU=ON  L57 NOT L58
L64           57 SEA SPE=ON  ABB=ON  PLU=ON  L62 OR L63
L65           60 SEA SPE=ON  ABB=ON  PLU=ON  L58 OR L64
L66           32 SEA SPE=ON  ABB=ON  PLU=ON  L65 AND PROC/RL
L67           44 SEA SPE=ON  ABB=ON  PLU=ON  L65 AND PREP/RL
L68           49 SEA SPE=ON  ABB=ON  PLU=ON  L66 OR L67
L69           26 SEA SPE=ON  ABB=ON  PLU=ON  L68 AND DEV/RL
L70            1 SEA SPE=ON  ABB=ON  PLU=ON  L69 AND L1
L71           11 SEA SPE=ON  ABB=ON  PLU=ON  L68 AND  CATHODE MATERIAL?
                 E BATTERY CATHODES/CT
L72       31511 SEA SPE=ON  ABB=ON  PLU=ON  "BATTERY CATHODES"+PFT/CT
L73           37 SEA SPE=ON  ABB=ON  PLU=ON  L68 AND L72
L74           41 SEA SPE=ON  ABB=ON  PLU=ON  L69 OR L71 OR L73
L75           20 SEA SPE=ON  ABB=ON  PLU=ON  L74 AND  (HALIDE? OR CHLORIDE?
                 OR FLUORIDE? OR BROMIDE? OR IODIDE?)
L76           41 SEA SPE=ON  ABB=ON  PLU=ON  L74 OR L75
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